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22 January 1981

West Europe Report

(FOUO 3/81)

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WEST EUROPE REPORT

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CONTENTS

ENERGY ECONOMICS FRANCE

ENERGY POLICY: COAL, GAS SOURCES, USE, PROJECTIONS

Paris REVUE DE L'ENERGIE in English No 328, Oct 80 pp 313-342

[Summary of report of Commission on Energy and Raw Materials of the French Eighth Plan]

[Excerpts]

Taking over from oil

The Commission on Energy and Raw Materials of the VIIIth Plan met between October 1979 and June 1980. In March, in a mid-session report, it suggested different courses of action, for energy policy between now and 1990, to the Government. All its work, discussions and debates are assembled together in its final report, entitled « La Relève du pétrole » and its appendices. But in view of the length of this document, it has been considered desirable to prepare a summary, in which its main points are retraced, the steps of the argument are set down, the pattern of the demonstration the Commission has attempted to make is emphasized, and its principal recommendations are given.

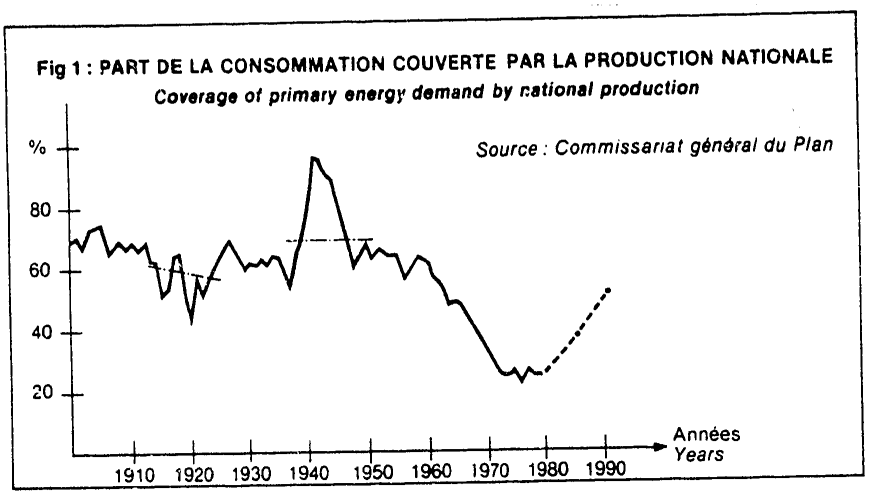
This synthesis is deliberately selective and confined to an analysis of energy problems ; the sections dealing with raw materials in the report were considered to be sufficiently will grouped and concise for rapid consultation and to make further condensation unnecessary. Even for energy, numerous points, though of obvious importance, have been hardly touched on or sometimes omitted, since they could confuse the overall coherence of the argument. The summary is developed under seven main headings :

1. The growth of dependence
2. The awakening
3. Future risks
4. Cutting back on oil
5. The effort of adaptation needed
6. The macroeconomic implications of energy redeployment
7. The policies and means recommended.

1. — The growth of dependence

After a long period during which coal reigned supreme, a new phase in French energy history began around 1960. The use of coal fell off sharply, by nearly 50 % in 13 years. On the other hand, the consumption of natural gas, electricity (of hydraulic origin) and above all of oil developed rapidly : during a period of heavy growth in energy consumption, additional oil imports alone were sufficient to cover the total increase in demand. Thus, for the first time, diversification took place on the crest of a veritable tidal wave of imported oil, and led to a loss of independence vis-à-vis the outside world.

This trend, which was seen in all the industrialized countries, was a logical one : the convenience and flexibility of oil, the development of cars and road transport, the attraction and benefits of an unobtrusive and relatively unpolluting form of energy, all combined with a fall in the price of oil products compared with that of other energy sources to justify the fact that the 1960s, the golden decade in the growth of the consumer society, was the era of oil, even if no one really noticed it.



2.2. How did the French economy adapt to the first oil shock ?

TABLE 1 : The structure of energy consumption

(%)	1973	1979
Coal	17.4	17.9
Oil	66.7	57.1
Natural gas	8.5	12.2
Primary electricity	7.4	12.8
	100.0	100.0
Total Mtoe (1)	175.4	190.5

(1) Million (metric) tons of oil equivalent.

2.3. On the supply side, the main action taken to counter the 1973 price rises was to speed up the nuclear programme.

Every year since 1974, decisions committing the installation of about 5,000 MW have been taken ; this should lead, from 1980 onwards, to additional energy availability equivalent to 6 million tons of oil each year.

At the same time, an effort has been made to limit the use of fuel oil in thermal power plants and to substitute coal for it : the share of coal in the fuel used in the electricity power plants of E.D.F. has thus risen from 16 % in 1973 to 46 % in 1979.

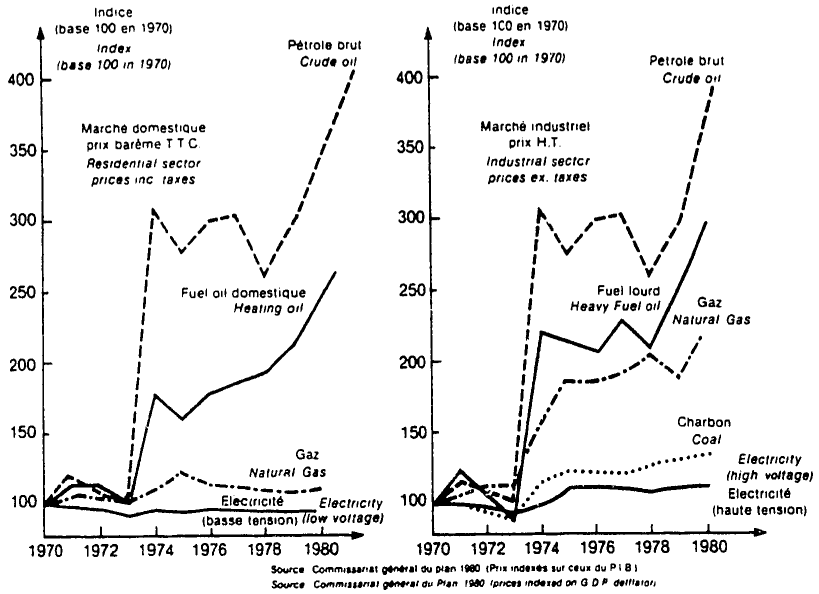
This reconversion was made possible through increased imports of steam coal. Purchases abroad have risen from 16 million tons in 1973 to 34 million tons in 1979. On the other hand domestic production has continued to decrease, though admittedly at a slower rate than in the past : despite the cancelling of price control, coal prices have not gone up sufficiently to enable Les Charbonnages de France to balance its costs, and it is still operating at a loss.

For oil and gas, there has been little improvement in supply conditions : for the former, the effort of minimize costs has led to an increase of the share of OPEC crudes in our purchases and for the latter, deliveries from France and Holland are in the course of giving way to supplies from the U.S.S.R., the North Sea and Algeria so as to cover the growth of the demand.

2.4. Turning to demand, there has been a marked change compared with the previous trend : the apparent elasticity of energy consumption in relation to G.D.P., which was 1 for the 1958/1973 period, fell to 0.5 after the first oil shock, but most of this reduction occurred in 1975, when the recession was at its worst. Since then, the trend has stabilized at around 0.8.

The "energy savings" thus achieved have been evaluated at 18 million toe for 1979, more than one half of which was in the residential and tertiary sectors. This result was attained through a bulky arsenal of regulations, actions to influence behaviour, and revisions to equipment standards, all in good time. But above all it

FIG.3 : Evolution des prix réels des énergies dans les secteurs de consommation
Movements in the real prices of different energies in consuming sectors



Source Commissariat général du plan 1980 (Prix indexés sur ceux du P I B)
Source Commissariat général du Plan 1980 (prices indexed on G D P deflator)

was the consequence of changes in the real prices of energy : that of oil products rose, as did, to a lesser extent, that of gas ; while coal and especially electricity remained stable.

To all these economic uncertainties surrounding energy prices, must be added those arising from the political context in the Middle East, from East-West relations, producers' and buyers' attitudes, the growth rates in the industrialized countries, etc. Consequently, since making predictions in these domains would be very hazardous, the Commission has suggested three scenarios of how the international energy market may evolve.

a) Worst case scenario. This is the scenario of a breakdown in supplies : following a political or military crisis in the Middle East, production in the Gulf is cut by a third or half ; for France, this would mean the disappearance of 25-40 % of her oil resources and 15-25 % of her total energy resources. The Commission did not feel competent to deal with such a situation. Not because it is improbable, but because the problem would not be one of planning so much as organizing a state of drastic shortages, with energy rationing and sacrifices.

b) Pink scenario. An agreement is reached between the producing and consuming countries to plan price increases on lines that might be based on the ideas suggested by the long-term strategy group of OPEC.

In constant 1980 money terms, crude oil will go up by 2 % a year until the year 2000, reaching £ 37/bbl in 1990 and $ 45 in 2000. The price of coal will rise less fast, by 1 % per year, and its price c.i.f. Le Havre will go up from $ 50/t ($ 10/boe) to $ 55/t in 1990 and $ 61 ($ 13/boe) in 2000.

The other prices are given in the table and figure that follow.

c) Grey scenario. No agreement is reached between producers and consumers. The former reduce their production to eliminate "unwanted" production ; the latter do what they can to maintain sufficient growth to avoid massive unemployment. It is difficult to say how far prices will rise : the rate of 7 % per year given is simply an approximate illustration of the possible increase. It brings the price per barrel up to $ 60 in 1990. After this date, it is to be hoped that oil prices may stabilize with the return to relative energy abundance.

TABLEAU 2. — Evolution des consommations d'énergie entre 1978 et 2000 (en Gtep)
TABLE 2. — Projection of world energy demand to the year 2000 (in Gtoe)

	Charbon *Coal*	Pétrole *Oil*	Gaz naturel *Natural gas*	Nucléaire *Nuclear*	Hydraulique *Hydroelec.*	Energies nouvelles *New energies*	Total *Total*
1978							
Pays à économie de marché ***Market economies***	0.8	2.5	0.85	0.15	0.35	—	4.65
OCDE *OECD*	0.65	2.0	0.75	0.15	0.25	—	3.8
Pays en voie de développt. *Developing countries*	0.15	0.5	0.1	—	0.1	—	0.85
Pays à économie planifiée ***Centrally planned economies***	1.0	0.6	0.4	—	0.05	—	2.05
Total monde *World total*	1.8	3.1	1.25	0.15	0.4	—	6.7
1985							
Pays à économie de marché ***Market economies***	1.2	3.0	1.0	0.4	0.4	—	6.0
OCDE *OECD*	1.0	2.3	0.8	0.35	0.3	—	4.75
Pays en voie de développt. *Developing countries*	0.2	0.7	0.2	0.05	0.1	—	1.25
Pays à économie planifiée ***Centrally planned economies***	1.4	1.1	0.6	0.05	0.1	0.05	3.3
Total monde *World total*	2.6	4.1	1.6	0.45	0.5	0.05	9.3
1990							
Pays à économie de marché ***Market economies***	1.5	3.2	1.1	0.7	0.5	—	7.0
OCDE *OECD*	1.2	2.4	0.85	0.6	0.3	—	5.35
Pays en voie de développt. *Developing countries*	0.3	0.8	0.25	0.1	0.2	—	1.65
Pays à économie planifiée ***Centrally planned economies***	1.6	1.2	0.8	0.1	0.15	0.05	3.9
Total monde *World total*	3.1	4.4	1.9	0.8	0.65	0.05	10.9
2000							
Pays à économie de marché ***Market economies***	2.2	3.2	1.5	1.8	0.7	0.2	9.6
OCDE *OECD*	1.7	2.2	1.0	1.9	0.3	0.15	6.85
Pays en voie de developt. *Developing countries*	0.5	1.0	0.5	0.3	0.4	0.05	2.75
Pays à économie planifiée ***Centrally planned economies***	2.5	1.1	1.2	0.3	0.2	0.1	5.4
Total monde *World total*	4.7	4.3	2.7	2.1	0.9	0.3	15.0

FIG.5 : Scénarios de prix / *Price scenarios*

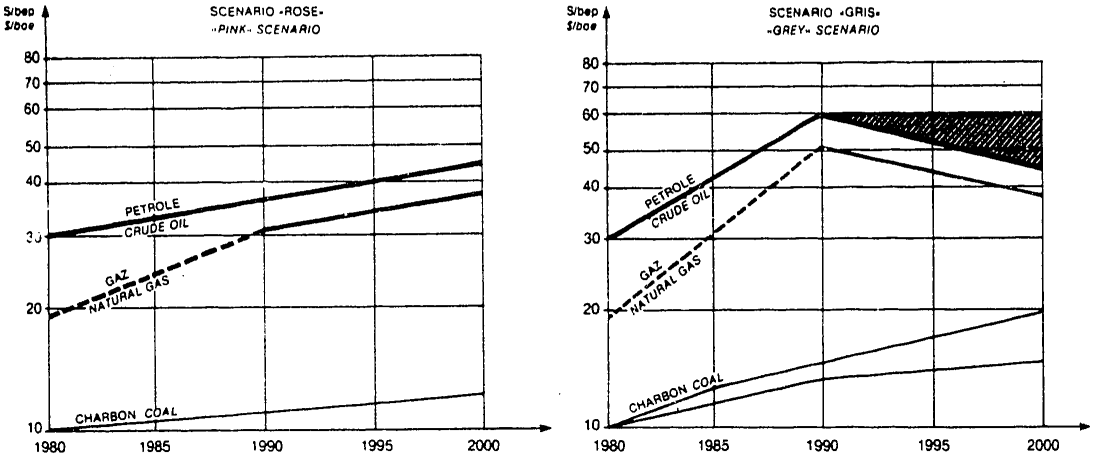


TABLEAU 3. — Perspectives d'évolution des prix de l'énergie entre 1980 et 2000 (1)
TABLE 3. — Outlook for energy-price changes between 1980 and 2000 (1)

	Base : début 1980 *Base jan 1980*	SCENARIOS 1980 à 2000 Scénario « rose » *Pink scenario*	 Scénario « gris » *Grey scenario*
Pétrole *Oil*	30 $/baril *$ 30/bbl*	+ 2 % par an *+ 2 % per year*	1980-1990 : + 7 % par an 1990-2000 : Stabilité ou ajustement vers 45/60 $ baril
Gaz *Natural gas*	3,5 $/MBTU *in 1990 : equivalent to price of low sulfer fuel oil (delivered to the user)*	En 1990 : équivalence au prix du fuel lourd B.T.S. (chez l'usager)	
CHARBON *Coal*	50 $/t *$ 50/t*	+ 1 % par an *+ 1 % per year*	+ 3 % par an jusqu'en 1990 : 1 % ensuite ou + 5 % par an jusqu'en 1985 : 3 % ensuite *+ 3 % per year until 1990 : 1 % ensuite* *or + 5 % per year until 1985 + 3 % after*
ELECTRICITÉ nucléaire *Nuclear electricity*	13,5 c/kWh *cF 13,5/kWh*		Stabilité *Stable*

(1) en monnaie constante.
in constant money terms.

Coal goes up by 3 % per year (bringing its price to $ 67/t in 1990) until 1990, and then by 1 % until 2000 (on which date its cost will be $ 74/t, equivalent to $ 15/boe).

It is not possible to assign a degree of probability to each of these scenarios. But in view of the difficulties of dialogue between producers and consumers, the danger of fostering illusions and the logic of events in the OPEC countries, it is around the grey scenario that energy policy should be planned in any case.

4. Cutting back on oil

In consideration of the risks inherent in and the outlook for the international environment, the top priority is quite clear : steps must be taken to move away from

oil, and as quickly as possible. Taking into account the flexibility of oil supplies, their faculty for adaptation and their vocation as a "stop-gap" in the energy balance, there only exist, arithmetically speaking, two means for achieving the aim : reducing overall consumption and increasing the share of the other energies. These two directions will be explored successively.

4.1. What target for energy consumption can be fixed for the period until 1990 ?

Energy consumption depends principally on the rate of growth of G.D.P. and on that of the real cost of energy. The international scenarios (rosy and grey) give hypotheses for how the real cost of energy will move in the next twenty years. One is still to be suggested for growth. As the events of recent years have shown, the trend in energy costs conditions the rate of growth in many respects. This fact has allowed us to assign to the rosy scenario, for France, a growth rate of 3.5 % per year, whereas the grey scenario would only appear to be compatible with a lower rate, of the order of 2.5 %.

Based on these assumptions, figure 6 gives the different consumptions that would be attained in 1990 according to the various hypotheses for prices and growth rate, if the relations observed statistically over the period 1960-80 between energy consumption, growth and the cost of energy were to be corroborated in the future.

Projections give values varying between 221 Mtoe (grey scenario : 2.5 %) and 266 Mtoe (rosy scenario : 3,5 %).

In the case of the grey scenario, moderation in consumption would be largely due to the reduced rate of growth. Furthermore, the rise in prices would certainly provide an incentive to save energy. The obstacle to overcome would not be that of motivation, but rather of finding the finance for the investment needed ; the low growth rate and the rise in the cost of energy would favour neither an increase in wage-earners' purchasing power nor the accumulation of profits by companies. The economy would suffer from anaemia.

If however the rosy scenario were to apply, companies would have the resources necessary for the enormous effort of energy redeployment (1), but would they have the motivation and clear vision to undertake this ?

(1) expression borrowed from the field of strategy.

We are thus caught in a trap : either we have an economy that is motivated to reduce its energy dependence but is too anaemic to do so rapidly ; or, an economy that has the means to accomplish this but wants to forget the perils that surround it and make hay while the sun shines. If we are to break out of this vicious circle, the only possible strategy is to fix a course and keep to it whatever happens.

The energy policy followed must enable France to have a growth rate of 3.5 %, if the international situation allows it. This will mean a considerable effort in energy saving, and the objective recommended is :

— for 1985 : 219 Mtoe
— for 1990 : 242 Mtoe

If the grey scenario applies, this policy will be much more difficult to follow, and in practice we could be reduced to trying to maintain the previous trend.

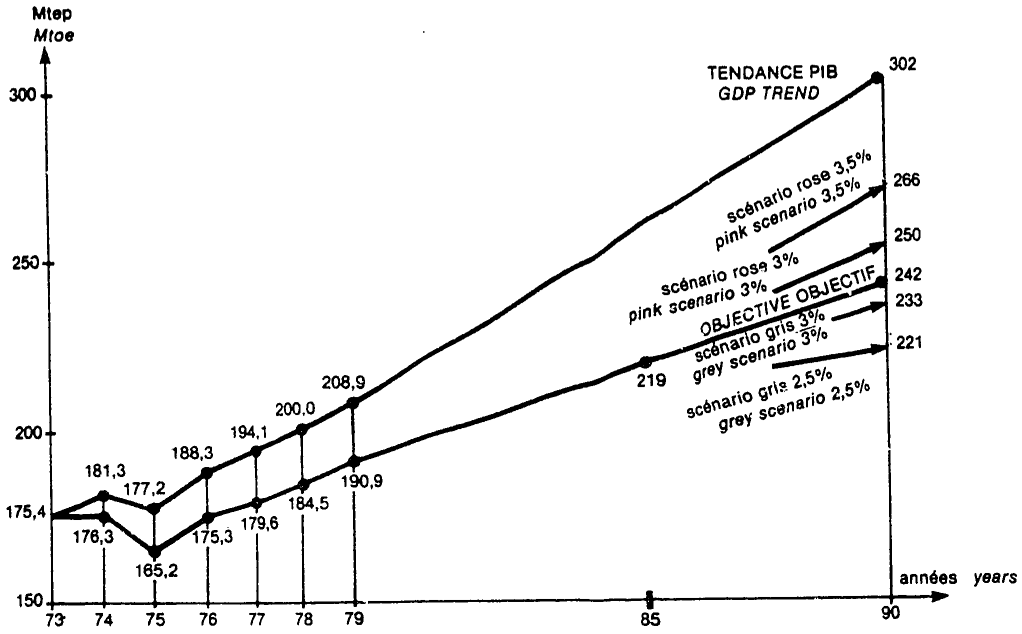
4.2. What energies are available for satisfying this consumption need ?

— *Coal :* imported coal has much in its favour for French energy supplies : gigantic reserves exist, and these are well distributed geopolitically ; its price, which is remarkably stable (in constant money terms) despite the rise of oil price, gives it a competitive advantage. It is true that heavy investment is required to mine it ($ 100 to 150/t/y), and numerous obstacles (transport, unloading zones, etc) remain to be overcome. But these are not insuperable and coal world trade should progress rapidly over the next fifteen years.

There would thus be no major difficulty in increasing the level of French imports (30 Mt in 1979) under satisfactory conditions of price and security of supply. However, whereas foreign oil companies have for several years been acquiring control over numerous coal mines, usually the richest, French operators have played but a minor role in this movement. It is becoming urgent that they should participate more actively, both in the interests of French procurement of supplies (the acquisition of mining rights equivalent to national needs would be a reasonable objective) and also in those of penetrating a world market that is likely to grow very rapidly.

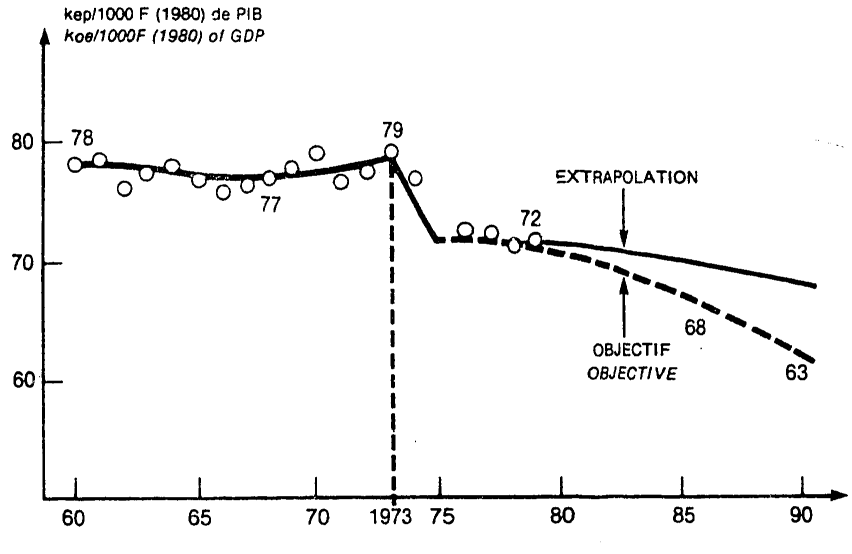
Operators should therefore be able to produce or to purchase abroad and sell on the domestic market. The monopoly over imports, while its effectiveness must be maintained, will probably have to be modified to achieve this end.

FIG.6 : Tendances et objectif de consommation d'énergie
Energy consumption : trends and objective



Source : Agence pour les économies d'énergie *Source : Agency for Energy Savings*

FIG.7 : Evolution de la consommation rapportée au P.I.B. en volume
The relation of French energy demand to real G.D.P.



Source Commissariat Général du Plan

Unfortunately, France is less well favoured with coal deposits on her national territory. Those that can be exploited under acceptable economic conditions are mostly in Lorraine or Provence, or in certain strip mines. In the other coalfields, it seems inevitable that a certain degree of regression should continue.

The fact that there have been virtually no exploration outside the traditional zones during the last twenty years, together with the progress that has been achieved in research techniques, makes it both possible and necessary to draw up an inventory of exploitable coal reserves. This would appear to be a high priority today : each extra million tons produced at a competitive price would make it possible to save $ 50 - 100 million on coal imports.

All in all, domestic production could be around 10 to 15 Mt in 1990 ; the exact amount will depend on the production costs of our coalfields, compared with that of imported coal.

— *Nuclear energy :* the French nuclear programme is an industrial venture on an exceptionally large scale ; it is progressing satisfactorily in general, and has been

The Commission feels that a relatively "grey" trend in energy prices and moderate growth (of the order to 2.5 %) should be assumed ; the Government, by fixing a higher growth objective in its programme of April 2nd 1980, implicitly favours the rosy scenario. It matters little, if we are on the course : this is the condition for a return to some degree of independence.

regularly implemented for the last 6 years. Since it is financed through the capital market and very long construction lags together with planned programming are implied, the room to manœuvre between now and 1990 is not very large :

• if, after the acceleration taking place in 1980 and 1981, the annual commitment rate amounts to 5,200 MW, electricity production of nuclear origin could reach a level of 73 Mtoe in 1990 ;

• the maximum programme technically possible would include, in addition to this planned development, three units of 1,300 MW each between 1982 and 1984, i.e. about 3 extra Mtoe.

For all the hypotheses considered, the nuclear option is fully justified economically and should permit electricity to become competitive in a wide range of uses ; and it also offers France advantages from the point of view of security of supply : uranium only accounts for a small share of the cost of the electricity,and the "fuel cycle" is satisfactorily controlled from within the national territory. The enrichment capacity at Eurodif is sufficient to provide for French needs up to 1990 ; the installations at Marcoule and La Hague are in a position to reprocess the spent fuel ; and lastly, France should be able to produce 30 to 40 % of her needs and to have available a stockpile of uranium representing several years of domestic consumption.

Two uncertain points remain in this very positive picture : the question of keeping control over costs in the building of nuclear power plants and fuel-reprocessing centres ; and the equilibrium between world supply and demand for uranium which, if more and more nuclear programmes are put in hand, could lead to price tension in the first half of the next century. The fast breeder reactor is a safeguard against such threats. Studies should therefore be continued with the object of improving the economic and commercial advantages offered by this system, so as to make it competitive with light-water reactors over a reasonable range of uranium prices. This being the case, Electricité de France could undertake the building of two industrial-scale reactors, which would come on stream in about 1990. The interests at stake (multiplying by more than 50 the energy reserves contained in the uranium) fully justify this effort.

— *Hydroelectricity* is not likely to be able to provide much additional energy by the end of the century : we may hope to increase the present figure of 14 Mtoe to about 16 in 1990 (including 0.25 Mtoe from micro-power stations). On the other hand, the supplementary power it can provide — especially from pumped-water installations — should help to permit more economic operation of the electricity production network.

— *The "new energies"*. The outpouring of ideas and the first experiments carried out since the first oil crisis are leading to better knowledge of the potential of the "new" energies and of their relative importance.

• *Geothermal energy*

The country's resources in geothermal energy have been evaluated at 5 to 6 million toe. Economic exploitation of this requires the presence of a sufficient number of housing units close to a hot water source. But the technology is now well known and, for an additional investment of 5 to 8,000 F per toe, should permit the production of 0.6 to 0.9 million toe in 1990.

• *Biomass*

Between now and 1990, the biomass, and especially wood, should begin to make a significant contribution to the country's energy supplies (about 8 million toe).

For this, choices will have to be made between the different uses of wood; we must perfect operating methods, set up systems for felling, preparing and collecting the wood, and initiate pilot operations in several large afforested areas: the resources exist, but exploiting them will not be easy.

• *Solar energy*

The first experiments indicate the scale of the investment necessary: 10 - 15,000 F per toe for domestic hot water supplies and an average of 30,000 F per toe for space heating.

These are large expenditures, but their counterpart is decentralized energy and absolute security of supply.

This being the case, though the contribution of solar energy will still be modest on the national scale in 1990, the experiments should be encouraged, in order that this energy should have attained technical and economic maturity by this date.

All in all, these new energies could provide nearly 10 million tons of oil equivalent in 10 years' time. To turn this estimate into fact, the Commission feels that it is urgent to allocate responsabilities for each of them, together with a time-table for implementation of the different stages.

— *Natural gas*

The growth of gas consumption made possible by the discovery first of the French Lacq field and then of those in Holland has contributed to the security of French energy supplies. Nevertheless, the situation is likely to be less favourable in the future. It is true that further large discoveries may be made, in the North Sea and in Africa, and no efforts should be spared in such prospection.

But such discoveries cannot be counted on, and if they are not made, the level of our consumption must be adapted so as to be compatible with our resources, and so as to ensure that we are not too dependent on one or two supplying countries.

Moreover, the price to be paid for such supplies is at present very uncertain. If it were to exceed a certain threshold, it is by no means sure that consumers would be prepared to pay it.

Consequently, our gas supply policy should be guided by two considerations :

• a balance must be maintained between supplies to the general public, which must be continuously available, and supplies to industry, which may be interrupted for short periods ;

• better geographical diversification must be achieved.

It would therefore seem prudent to fix an objective of 37 million toe for 1990, leaving the possibility of revising this objective in the meantime if discoveries in France or Western Europe were to allow this.

— *Oil*

The French oil supply policy should have three objectives: better geo-political diversification of import sources, an effort to increase the national potential in hydrocarbons, and maintenance of the technical advance achieved by the French oil industry. For, this advance helps to counterbalance the lack of domestic production with active French presence abroad, and, by opening up access to oil resources, improves the security of our supply position.

4.3. This analysis of the French primary-energy supply situation leads the Commission to predict the following energy balance for 1990.

(in million toe)

— Coal	28/33
— Nuclear electricity	73/76
— Hydroelectricity	15
— New energy sources	10
— Gas	37
— Oil	70/80

The exact breakdown — especially for oil — will depend on the ability to mobilize national resources (coal, new energies, nuclear electricity) and, further, on the adaptation of consumption structure.

5. The effort of adaptation needed

If France wants to recover greater independence in energy, she must make a substantial effort to save energy, and the breakdown of supplies have to be radically changed during the 1980's. Will it be possible — and at what price — to reduce specific consumptions, to reduce the dependence on oil progressively, and to increase the share of coal and electricity without upsetting accepted like styles ? What will be the effects of adapting demand to this new structure have ?

The detailed studies carried out for the Commission by sector and energy category suggest the scale of the effort that will be necessary, its cost and of its difficulties. They may be summarized in four essential points :

5.1. The structure of consumption will be radically changed by :

— reducing energy consumption in all sectors ; for housing and the tertiary sector, a particularly determined policy must be implemented ;

— a return to coal in industry ;

— increased penetration of electricity ;

— the use of the new energy sources for space heating and domestic hot water.

The last of these four modifications depends as much on individual effort as on the development of appropriate techniques and supply conditions.

The three others imply a real mobilization campaign :

a) Saving energy in housing

While in new housing construction a reduction in energy consumption can be obtained by raising the required insulation standards, it will be much more expensive and tedious to achieve the same result in existing houses and apartments. However, this is no less essential, since for work costing on average less than 10,000 F per toe saved, a permanent reduction in consumption of 4 million toe per year can be achieved in 1990.

The fulfilment of such an objective implies that by the end of the VIIIth plan 500,000 housing units should be modified on these lines each year. To attain this result , the professions concerned will have to be organized accordingly, diagnoses will have to be provided, the process of decision in co-ownerships will have to be speeded up and suitable financial facilities set up. The energy producers have a part to play in implementing this policy.

b) The use of coal in industry

The obstacles to a return to coal lie much more in the area of insufficient demand than in supply difficulties.

For the user, the disadvantages of coal are various in nature : it is heavy, solid, more difficult to transport than fuel oil or gas, and requires large stocking areas. The boilers in which it is burnt cost two or three times as much as those used for hydrocarbons. Ash and impurities make it difficult to deal with and require additional handling. It is a polluting form of energy implying the installation of expensive dust removal equipments. Lastly, industrial companies would like to be given supply guarantees before they agree to reconvert to coal.

If they are not removed, all these obstacles could compromise the achievement of the objective the Commission has set for 1990 : quintupling the consumption of coal in industry.

This objective, which is fully justified by the price hypotheses made in the scenarios (see figure 8), may be perhaps the most difficult challenge French energy policy will have to face in forthcoming years.

c) The penetration of electricity

Electricity should be providing the equivalent of 100 million tons of oil in ten years' time. How to expand the markets of that energy ?

The problem is very different in industry from that in the residential and tertiary sector.

— In the latter, the economic calculations suggest that selling the electricity should not pose major problems assuming the price hypotheses given in the Commission's scenarios. It would simply be necessary to ensure that wastage is avoided and especially to reduce the specific electricity consumption of domestic equipment, and to encourage experimentation designed to derive maximum benefit from the structure of electricity production in a system using nuclear energy (bi-energy devices, heat pumps).

FIG.8 : **Prix d'équivalence du charbon et du fuel**
Equivalent prices of coal and fuel oil

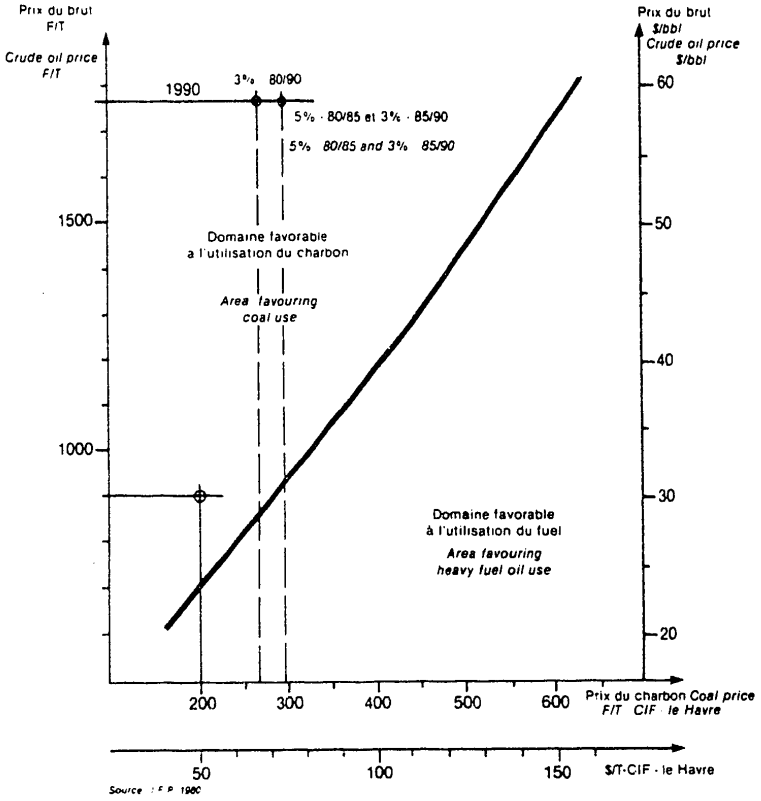
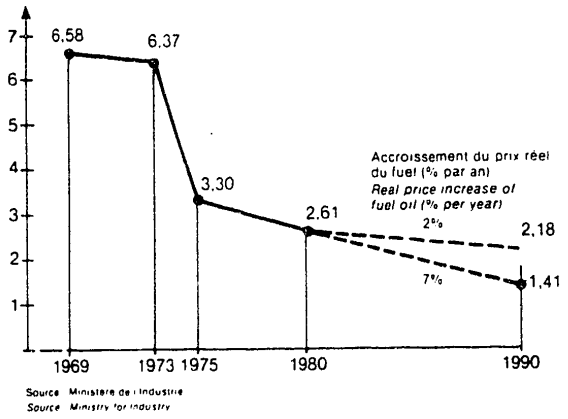


FIG.9 : **Prix relatif de l'électricité par rapport au fuel lourd (usages industriels)**
Relative price of electricity for industry, compared to heavy fuel oil



— In industry, the difficulties are on quite a different scale : substituting electricity for fuel oil or gas implies modifying processes, and sometimes developing new technologies. There is thus more uncertainty here, associated with the growth rate of the French economy and its ability to innovate. However the way its price is moving compared with that of heavy fuel oil is increasing the relative advantage of electricity.

5.2. But these drastic changes are absolutely necessary if oil is to be restricted rapidly to its specific uses (transportation and petrochemicals) and if the recommended supply policy is to be achieved.

TABLEAU 4. — Le bilan énergétique 1979 (1)
TABLE 4. — The 1979 energy balance

	Charbon *Coal*	Pétrole *Oil*	Gaz *Gas*	Hydraulique *Hydroelec.*	Nucléaire *Nuclear*	Energies nouvelles *New energies*	Energie secondaire *secondary energies* prod.	cons.	TOTAL
Industrie et sidérurgie *Industry and steel making*	8,5	23	12	—	—	—	- 2	21,5	63
Résidentiel et tertiaire *Residential and tertiary*	4	26	10	—	—	3	—	23	66
Agriculture *Agriculture*	— —	3	—	—	—	—	—	—	3
Transports *Transportation*	—	35	—	—	—	—	—	1,5	36,5
Consommation finale *Final consumption*	12,5	87	22	—	—	3	- 2	46	168,5
Producteurs *Producers*	2,5	8,5	- 1,5	—	—	—	—	2,5	12
Centrales électriques *Power plants*	19,5	11,5	2	16	8,5	—	- 50,5	—	7
Pertes *Losses*	—	1,5	0,5	—	—	—	—	4	6
TOTAL	34,5	108,5	23	16	8,5	3	- 52,5	52,5	193,5

(1) Comprenant 3 Mtep de bois en énergies nouvelles (le tableau 1 n'incluait pas le bois)
3 Mtoe of wood included in "new energies" (not taken into account in table 1).

5.3. The cost per ton of oil saved varies very widely depending on the method adopted or the sector in question: from 2,800 F in industry to 30,000 F for solar heating.

TABLE 6 : The cost of various redeployment actions

Action	Cost (in 1980 F) per ton of oil saved
Higher insulation standards in a new house	9,00 to 10,000 F
All-electric heating in a new house	11,400 F
Insulating an existing house	about 10,000 F
Change to electric convectors in existing house, without extra insulation (1)	31,000 F
Placing a bi-energy system in an existing dwelling already provided with a conventional boiler	13,400 F
Geothermal heating of a major housing complex	5,000 to 8,000 F
Solar-heated domestic hot water	10,000 to 15,000 F
Solar space heating	30,000 F
Energy savings in industry	2,800 F (2)

(1) Leading to excessive electricity consumption.

(2) This cost, calculated for 1980, increases by 10 % in constant money terms annually.

But these differences and this price spread do not mean that the order of importance of the priorities can be established on this criterion only. Naturally, profitability must be sought in all cases, but considerations of security (ex. solar heating) and independence may influence this. What is more, the difficulty and scale of the energy redeployment needed and the inertia of the consumption structures are such that no significant result would be achieved, even by 1990, if only one or two forms of action are taken : energy policy must be diversified. To state the problem in simple terms, the time of easy saving seems to be over.

5.4. Redeployment will be expensive. The calculations made suggest a figure close to 250 billion F by 1990, i.e. nearly 25 billion F per year, distributed as follows :

— Industry	60
— Residential and tertiary	160
— Transport	15
Total	235

6. The macroeconomic implications of energy redeployment

6.1. The economic calculations have enabled us to classify the various means of energy redeployment and to estimate the cost of the investment it implies. Table 7 gives the corresponding expenditure for 1980 and that planned for the duration of the VIIIth plan (1981-1985). If we add together the investment for production and that required for redeployment, we obtain a figure of nearly 85 billion F per year that must be invested in the next few years. This is about 40 % up on the 1980 figure, and the structure of expenditure is significantly modified : whereas at present only about 15 % is devoted to redeployment, this proportion should be doubled in the future.

The sums needed are so large that it is tempting to make this mutation the vector for the "new growth" and a considerable source of employment. This makes it desirable to examine with care the consequences of energy redeployment on the country's "major balances" : inflation, employment, foreign trade.

6.2. The simulations carried out with the help of models have given the Commission a fairly comprehensive and coherent picture of the macroeconomic repercussions of an energy-saving policy. To sum up in a single sentence the impression this gives : this is probably the best form of expansionary policy possible, but no miracle exists by which some degradation of the foreign payments account can be avoided.

- The best form of expansionary policy possible. It without doubt permits best balance between growth and equilibrium on foreign account, in so far as for the same amount of growth it has the least adverse effect on the foreign balance. But this adverse effect is certainly there.

TABLE 5. — Les bilans 1990 dans deux hypothèses de recul du pétrole (1)
The 1990 energy balances, for two hypotheses of oil regression (1)

VARIANTE A
ALTERNATIVE A

	Charbon *Coal*	Pétrole *Oil*	Gaz *Gas*	Hydraulique *Hydroelec.*	Nucléaire *Nuclear*	Energies nouvelles *New energies*	Electricité secondaire *Secondary electricity* prod.	cons.	TOTAL
Industrie et sidérurgie *Industry and steel making*	19	6	22	—	—	1	– 3	34	79
Résidentiel et tertiaire *Residential and tertiary*	5	7.5	18	—	—	7	—	51	88.5
Agriculture *Agriculture*	—	2	—	—	—	2	—	—	4
Transports *Transportation*	—	42.5	—	—	—	2	—	2	46.6
Consommation finale *Final consumption*	24	58	40	—	—	12	– 3	87	218
Producteurs *Producers*	2	5	– 1	—	—	—	—	7	13
Centrales électriques *Power plants*	7	4	1	14	73	—	– 97	—	2
Pertes *Losses*	—	1	2	—	—	—	—	6	9
TOTAL	33	68	42	14	73	12	– 100	100	242

• No miracle. The burden of the external accounts will remain very heavy, and it will take many years to get rid of it. In the mean time, the vicious circle will remain : to loosen the constraint from abroad, energy must be saved ; but to save energy, it is necessary to invest ; and investment, by stimulating growth, increases imports.

6.3. Above all, the reasoning set out above suggests how to obtain the best results from such a policy. For maximum success, the investment made must be as efficient as possible and as much as possible of the energy saved must be oil (i.e. expensive imported energy) ; and the more the real price of the latter rises, the less difference there is between the selling price of products and the purchasing price of materials, and the more the demand liberated by these "savings" is channelled towards goods with a low import content, the greater this success will be. The need for a selective policy in State subsidizing is not the least important of the consequences of this analysis.

7. The policies and means recommended

After having set an objective for the move away from oil, evaluated the cost of the energy redeployment corresponding to this target and assessed the consequences for the economy as a whole resulting from the payment of this cost, it remains to ask ourselves how the necessary funds can be assembled, the appropriate forces mobilized, and the desired change initiated and successfully carried out.

Leaving aside here sectorial policies (vis-à-vis produvers and consumers) — some of which have been suggested in the analysis of supply or demand — the Commission would like to emphasize three key factors in the success of the policies proposed :

— prices ;

— financing arrangements ;

VARIANTE B
ALTERNATIVE B

	Charbon *Coal*	Pétrole *Oil*	Gaz *Gas*	Hydraulique *Hydroelec.*	Nucléaire *Nuclear*	Energies nouvelles *New energies*	Électricité secondaire *Secondary electricity* prod.	cons.	TOTAL
Industrie et sidérurgie *Industry and steel making*	15	12	19.5	—	—	1	- 3	34	78.5
Résidentiel et tertiaire *Residential and tertiary*	4	10	16	—	—	7	—	51	88
Agriculture *Agriculture*	—	3	—	—	—	1	—	—	4
Transports *Transportation*	—	43.5	—	—	—	1	—	2	46.5
Consommation finale *Final consumption*	19	68.5	35.5	—	—	10	- 3	87	217
Producteurs *Producers*	2	6	- 1	—	—	—	—	7	14
Centrales électriques *Power plants*	7	4	1	14	73	—	- 97	—	2
Pertes *Losses*	—	1.5	1.5	—	—	—	—	6	9
TOTAL	28	80	37	14	73	10	- 100	100	242

(1) Hypothèse commune de croissance du P.I.B.: 3.5 % par an de 1979 à 1990.
Both alternatives assume a 3.5 % per year growth rate of G.D.P. from 1979 to 1990.

TABLE 7: Investments for energy production, savings and substitution (Billion French Francs)

	1980	Total 1981-85
Investments for production		
— *Oil companies*		
• exploration in France	0.8	5
• producing in France	0.7	4
• refining in France	5.0	18
• investment abroad (1)	8.8	50
— *Electricity*		
• production, distribution, transmission	31.1	170
• combustion cycle (2)		20
— *Gas*	3.3	20
— *Coal*		
• investment in France	1.4	6
• acquisition of foreign sharenoldings (3)		10 to 15
TOTAL	51.1	303 to 308
Investments for redeployment		
— *in industry*		
• energy savings	3.6	28
• substitution (4)	0.1	2
— *in residential and tertiary sectors*		
• energy savings in "old" buildings	4	25
• energy saving in "new" buildings		

• substitution (4)	0.2	30
• new energies (5)	—	20
— *in transport*	1.0	7
TOTAL	8.9	112
General total	**60**	**415 to 420**

(1) prospection and production

(2) french needs only

(3) by all French operators

(4) "extra" cost only

(5) here again, it is the "extra" cost compared with a reference solution (using fuel oil)

Source : C.G.P. and Ministry for industry.

— research and development.

7.1. The proposals we recommend take as a starting point three basic rules :

Rule n° 1 : Priority should be given, wherever possible, to liberal policies in the achievement of the objectives. In other words, decision-makers must be given the signals and incentives that will enable them to attain the common objective through their own initiatives. Liberalism thus conceived does not mean laisser-faire. It means setting up the conditions for decentralized implementation of redeployment, not just waiting for things to happen.

Rule n° 2 : While most of the programme can be implemented in this way, there are areas where the forces of the market and competition alone are not sufficient to mobilize individual action and direct it along the lines of the common interest as quickly as is desirable. This applies in particular to sectorial priorities such as the comeback of coal and energy savings in housing. In these areas, the Government must use its unique ability to organize, incite and even in some cases set up constraints if the desired goal has to be reached in good time.

Rule n° 3 : Though, depending on the way things turn out — a rosy, grey or dark grey colored future — energy policy will require some skill in adapting to circumstances and making the best of them, continuity and constant determination whatever happens must be its essential characteristic. The policies implied by rules 1 and 2 thus apply just as strongly in the rosy scenario hypothesis as in that of the grey one.

7.2. Prices

How can the price mechanism induce the economic agents to contribute to the common interest by acting to maximize their private interest ?

— For the competitive market to work, and because the energy markets are international, there must be a certain liberalism in the fixing of production prices for oil and coal. This movement, begun two years ago, must be continued.

— It is through their action on consumers' decisions that prices can exert their greatest effect, provided these prices can be known sufficiently far in advance. If investment decisions, which require a long-term view, are to be taken in the energy sector, it would appear essential to guarantee some degree of price stability.

Such a guarantee can be provided if the Government fixes a guideline price for electricity, based on its cost price which is itself essentially a function of the investment required.

But consider the case of coal. The producer will only decide to open up a mine if he is assured of a stable market at a price offering satisfactory remuneration. The purchaser will only undertake to modify his equipment if he is assured of being able to write off the cost over a reasonable period of time with guaranteed deliveries at a price whose future movement is known in advance. Supply contracts with terms of five to ten years, containing indexation clauses, constitue the normal preliminary to investment decisions.

There may be obstacles that prevent such a situation being realized — for example if the market is so unstable that long-term contracts cannot be concluded. In such a case, one might consider bolder solutions, in which the State plays the role of insurer. For example, the State could publish and guarantee, at least in a certain proportion, a system of coal prices relative to those of fuel oil, in favour of companies making investments to substitue the burning of coal for that of oil and wanting such a guarantee. But would the State, having become an insurer, resist the temptation to become an industrialist and trader too ? Such systems have their disadvantages. and much thought should go into them before they are introduced.

— In a period of shortage (even relative), prices should reflect scarcities to allocate demand with some efficiency.

However, in this area, even if it cannot control international prices, the State has all the necessary margin for manœuvre. The Commission would like to insist that the price mechanism be given absolute priority : a "true price" policy should be rapidly adopted, which would :

• recognize that world prices rises must be promptly passed along without "cheating" ; since any delay in adjusting domestic prices can only delay the desired process of change, encourage expensive wastage, and diminish the competitive capacity of French industry ;

• take account of competition among energies, with tariffs, especially for electricity and gas, set on a commercial basis ;

• give producers "the necessary latitude", on prices, possibly in exchange for precise pledges on quantity of supplies.

7.3. Financing arrangements

Energy redeployment implies a considerable investment effort and consequently a problem of financing arises. If a policy of credit restriction and monetary control is maintained in the future, will it be possible to commit the necessary expenditure ? Or should greater help be given in the financing of energy saving and substitution ?

— The aim of energy redeployment is at one and the same time to reduce energy consumption and to "save" and reorientate this consumption. While the principle of a premium in favour of energy savings in general must be maintained, it would appear desirable to give special emphasis to subsidies that encourage the conversion to coal (in industry), certain moves towards electricity (also in industry) when they allow savings of primary energy, and the use of new energy sources in housing.

Selective aid should be the rule for the future.

— Even though subsidies should indicate the priority attributed by the State to energy reconversion, it is the private sector, and the banks in particular, that will firstly be called on to finance this effort. The Commission would like to emphasize the need to channel savings into the energy sector, to encourage associations between banks and producing companies, and to render the conditions of bank finance attractive both for borrowers and lenders. Otherwise, no reconversion would take place.

7.4. Preparing for the future : research and development

In the midst of the upheavals that the world has experienced since 1973, it has been France's "good luck" to have devoted effort on an enormous scale, for nearly 25 years, to research, experimentation and development in the field of nuclear energy. No programme on the scale now being implemented could have been considered without this. And the lesson of this experience is valid for the future too. It is today that the techniques that will be used in 15 to 20 years' time must be prepared. If we do not make such preparation, our "good luck" for the future will not hold.

The Commission can only echo the cry of alarm made by the Consultative Committee for Energy Research and Development at the end of 1979, concerning the lack of money allocated to enegy R. & D.

It suggests that 0.15 % of G.D.P. should be allocated from the budget to this during the period of the VIIIth Plan, and recommends five priorities.

TABLE 8 : Average (over 1981-85) of budget funds necessary for energy research and development in France

	MF (1)	%	% ratio to GDP (in thousandths)
Nuclear fission	1,900	46 %	0.068
Energy use	1,000	24 %	0.036
Fossil fuels	600	15 %	0.021
New energies	400	10 %	0.014
Nuclear fusion	200	5 %	0.007
TOTAL	4,100	100 %	0.146

(1) In constant 1979 francs

Source : Consultative Committee for Energy Research and Development, Report n° 23, in Les Dossiers de l'Energie, September 1980, obtainable from the Documentation française.

— *Nuclear energy,* for better mastery of the conventional technique, pending the period after the end of the Westinghouse licence, to reduce costs in fast breeder reactors, and for research into the techniques used during the fuel cycle ;

— *Energy conservation* is a second field, somewhat neglected in the past, that promises high cost-effectiveness of public money invested. The exploitation of low-grade fuels, the improvement of heat exchangers, heat pumps, combined production of heat and power, the development of automation and microprocessors, drying processes, progress in the recycling of products with high energy content: all these are examples of fields in which substantial advances could be achieved;

— *The techniques of coal use* have been seriously neglected in the past, and we are considerably behind our principal industrial partners. At a time when there are greater and changing prospects for the use of coal, it is an urgent matter to reverse this trend and to carry out research in this sector with the object of achieving full-scale production of substitute natural gas within 5 years;

— *In the area of the new energy sources*, research should be directed mainly to solar energy (improving collectors) and to techniques for using the biomass (production of methanol, gasification and fermentation of animal fecal matter). The period of demonstration is over; the objective now is to make the technical progress that will reduce costs and permit industrial-scale production.

— Maintenance of the French advance in *techniques of oil production and exploitation* (offshore, aided recovery, heavy oil), and also in oil processing (heavy oil) requires a sustained intensification of R. & D. effort.

To conclude

There remain uncertainties and grey areas. To clarify these progressively, the Commission suggests that a series of studies should be undertaken in the fields of statistics, modelization, energy price and taxation policy, the energy content of normal goods and services, and the conversion of vehicles to diesel fuel. Based on the information provided by these studies and on the experience acquired in the meantime, an interim report, issued in about 1983, could summarize the progress made and suggest any necessary modifications and changes of emphasis.

A policy for energy and raw materials based on the mobilization of the country's resources cannot be implemented without cooperation with the supplying countries. Such cooperation, which must be sought on every occasion, will have a reasonable chance of success as soon as relative stability in prices and deliveries returns to the energy market.

Lastly, though the national effort proposed is a reasonable one, it is real, and should not be underestimated: the 60 billion francs of additional oil bill and the 85 billion francs of annual investment will only be paid if each citizen is persuaded to contribute a share of his income. This contribution is a necessary one. Energy is the water of contemporary civilization.

CSO: 3120

COUNTRY SECTION FEDERAL REPUBLIC OF GERMANY

POEHL SEES 1980 AS YEAR OF ECONOMIC CONSOLIDATION

Hamburg CAPITAL in German Dec 80 pp 70-71

[Interview with Karl Otto Poehl, president, Federal Bank: "Mr Poehl, Why Aren't You Playing in the Panic Orchestra?"]

[Text] Federal Bank President Karl Otto Poehl feels confident about the coming financial year. To be sure, he takes into account the complications that arose in 1980. But he feels that the situation can be handled with common sense and that in this approach stability must be given priority.

[Question] Mr Poehl, almost all forecasts for the 1981 financial year are altogether pessimistic. In brief: Hardly ever has the situation been so serious.

[Answer] It is true--all forecasters expect that--if there is any economic growth at all--it will be insignificant and that unemployment will be increasing.

[Question] The Federal Bank on the other hand has been showing restrained optimism: The situation is complicated, but with common sense it can be controlled.

[Answer] There is no doubt that the situation is difficult, but it would certainly be wrong to indulge in some sort of fatalism...

[Question] ...which has become the fashionable thing to do...

[Answer] ...rather, it is necessary to draw the correct conclusions from the facts, that is to say to pursue the right policy. Then one can justly hope that next year the situation will be improving.

[Question] Exactly what will improve?

[Answer] Even the experts of the Federal Bank predict a reduction of the payments balance deficit, a further decline in the rate of inflation, and an economic upswing in the course of the coming year.

[Question] Could the Federal Republic wish for anything better?

[Answer] I feel, however, that this will not come to pass automatically, but that we must create--by means of appropriate measures--the requisite framework.

[Question] This means first of all that we must amortize a mortgage, the million-mark deficit in the payments balance.

[Answer] In 1980, we acted as though this deficit did not exist. You could say we have literally been living on our capital. For we have financed this deficit for the most part from our foreign currency reserves. In the long term, things cannot go on like this.

[Question] In saying this, whom are you addressing yourself to?

[Answer] Everybody, especially the collective bargaining partners and the politicians in the parliaments must realize that the margin for expanding private and public consumption has become very small.

[Question] So now the exhortation as part of the forecasting ritual.

[Answer] No, only a reference to objective necessities that everyone--not only the trade unions--must take note of. It is true, however--the coming wage agreements are of crucial importance for the solution of the payments balance problem.

[Question] Strictly speaking, appropriate wage increases serve to reduce the rate of inflation, to improve our competitive position, to increase exports and ultimately to improve the payments balance. This in turn serves to consolidate the mark.

[Answer] Only if we succeed in maintaining our stability lead vis-a-vis other countries can we hope to be able to influence in our favor the exchange rate expectations at the foreign currency markets.

[Question] That is to say that in 1981 the mark must not slip again.

[Answer] In this respect, I am optimistic. There is no doubt that the objective data, the so-called fundamentals--above all the differences (as great as ever) in the rates of inflation--speak well for the mark.

[Question] Among the leading industrialized nations, the Federal Republic has the lowest rate of inflation, which in 1980 has been leveling off noticeably. The Federal Republic may justly take pride in this success of its high-interest policy.

[Answer] The monetary policy, which last year has been criticized by many people, certainly has been a determining factor in preventing the spectacular oil price rise--which we could not undo of course--from producing a price-wage-price spiral.

[Question] There has been a great deal of criticism to the effect that a high interest rate has a growth-inhibiting effect.

[Answer] I do not think so. In the present situation, a policy of cheap money and high budgetary deficits would in my opinion lead at best to short-term and dubious employment gains, while aggravating the fundamental problems.

[Question] First more inflation and then more unemployment.

[Answer] In the long term, a consistent stability-oriented policy is the best precondition for a high rate of employment and an appropriate rate of economic growth. The experience gained in other countries in the last few years has clearly demonstrated the truth of this.

[Question] So price stability is the be-all and end-all of the Federal Bank's policy.

[Answer] In my opinion, the primary objective--and I want to point this out most emphatically--is to improve the productive capacity and competitiveness of the national economy and to reduce--by means of a convincing energy policy--the Federal Republic's dependence on oil.

[Question] And if the dependence on oil persists? After all, other countries are likewise compelled to live with high payments balance deficits.

[Answer] The Federal Republic cannot do that in the long term. To be sure, we still have very large currency reserves, but in 1980 they have shrunk considerably. Moreover, we must keep in mind that next to the dollar the mark is the second most important reserve currency...

[Question] ...the mark accounts for 14 percent of the foreign currency reserves in the world...

[Answer] ...and that for that reason alone we need large liquid reserves. That is to say that if need be we will be able to react to massive capital movements and to shifts in the currency reserves, if we consider this to be necessary.

[Question] You can always fill the gap in the payments balance with imported capital.

[Answer] In the short term, we should try to finance this deficit through capital imports. In the medium and long term--I would like to repeat this--we must reduce it. I think we will be able to do so, especially since the economy's competitive position has greatly improved in 1980.

[Question] The best guarantee of the upswing predicted. Your words sound optimistic.

[Answer] I think that if we act right we will be able to solve the extraordinarily difficult problems that we are presently confronted with. However, this will be possible only if our plans are not thwarted by a new oil price shock or by unpredictable political events.

[Question] 1981--a year of consolidation, if we act right.

[Answer] If we succeed in consolidating the level of affluence attained so far and thus our social and political stability, we will have accomplished a great deal.

8760
CSO: 3103

COUNTRY SECTION FRANCE

GARAUD'S POLITICAL ROLE IN 1981 ELECTIONS, VIEWS

Influential, Powerful, Serious

Paris LE MONDE in French 20 Sep 80 p 11

[Article by Andre Passeron: "Mme Garaud at the 'Press Club': An Eminence Grise Without a Job"]

[Text] An "eminence grise" without a job, such is the fate that befell Marie-France Garaud when, on 9 June 1979, following in the steps of Pierre Juillet, she left RPR's [Rally for the Republic] 4th floor headquarters and the office on the other side of the wall from Jacques Chirac. It was the eve of the ballotting for election to the European Parliament. She took up her appointment with the Revenue Court as a member of the Audit Office on rotation which had been effected on 4 May 1974 by Mr Poher at the request of Giscard d'Estaing, economic minister, thus carrying out a last wish of Georges Pompidou.

Thus came to light the deepening disaccord between the head of the Gaullist movement and his 'private' political advisers. It is true that these latter, during the more than ten years that they have filled this role for Georges Pompidou, then Mr Chirac, have accumulated among themselves jealousies, resentments, and the desire for revenge. It is also true that for convenience, the second president of the Fifth Republic, and then the president of the RPR, had left their advisers so much freedom that, arrogating an authority that was not theirs, they could then at their leisure extend their power. So much so, that when faced with an offensive coming from all directions, Jacques Chirac, even while stating his pride "in having had as advisers and friends personalities of such intellectual and humane quality," felt constrained to part with them. Mrs Chirac herself, in September 1979, revealed her opinion of her husband's colleague by saying "She has contempt for people. She uses them, then dumps them. She takes me for an absolute idiot."[1]

Mrs Garaud, it is true, has little by little increased her political influence. But as Pierre Juillet, like Georges Pompidou, continued to avoid publicity and to maintain his role of behind-the-scenes adviser, Mrs Garaud, who at the beginning was only his assistant, began appearing more and more in the forefront of the scene. The orders given by both herself and Mr Juillet to the seccessive secretaries general of the Gaullist movement, then direct intervention in election preparations, their decisions peremptorily passed to the parliamentarians, were put up

[1] ELLE, 17 Sept 1979.

with as long as they were done in the name of the head of the state. But this militant activism, intensified by Georges Pompidou's illness, also brought down on them attribution of paternity of all the decisions made by Mr Chirac.

Adviser or Instigator?

Whether it's ousting Chaban-Delmas from the Hotel-Matignon in 1972, the vote in favor of Giscard d'Estaing in 1974, Chirac's taking the UDR [Union of Democrats for the Republic] in hand, his resignation from Hotel-Matignon, the 1978 election of the National Assembly when the RPR choose Edgar Faure over Chaban-Delmas, the "appeal of Cochin", or bringing into question the legitimacy of the president of the Republic during the European campaign, all these acts and many others are said to have been inspired by Mrs Garaud whereas in fact they were thought up by Juillet and simply put into operation by her. However, in her concern to explain the policies of the RPR president, Mrs Garaud appeared to her carefully selected questioners more as a somewhat imperious and wordy instigator than a discreet and well-informed adviser.

Even at the Rue de Lille while Jacques Chirac was touring the provinces during the election campaign, no decision could be made at party headquarters without her endorsement. Though Jerome Monad, then RPR's secretary general, succeeded in taking away her official title of mission chief, that she held in 1977/1978 only, he did not succeed in diminishing her influence. Seeking the shadows of power to the point of having always refused to solicit favor for the smallest commission, "Marie-France" could savor the power behind the throne.

In spite of this, the offensive against her developed little by little. One after another, other collaborators of Chirac took their leave and protests were addressed to the RPR president personally. Little by little he let himself be convinced that certain decisions instigated by his advisers had been damaging to him and from this their mutual confidence suffered. Sanguinetti's denunciation of the "gang of four" (Pasqua, Guena, Juillet and Garaud) unstopped the tongues of all those nurturing some long-standing grievance and who accused Mrs Garaud, more than Juillet, of regarding the militants as an entity--she had never attended a public meeting--acting as dealers in abstraction, intriguing behind the scenes, manipulating the members of the assembly like pawns and continually preparing new "strikes".

Chirac began to be aware that some of the decisions he had been advised to take did not seem competent in light of the "perchoir" affair at the National Assembly. Thus, a year later, despite the resolute and public hostility of Mrs Garaud to the barons of Gaullism, especially Michel Debre, the Mayor of Paris decided to throw in with the Mayor of Amboise for the European elections.

Fundamentally hostile to the opening to theleft of Chaban-Delmas and his new society, uneasy at a possible enlarging of the majority dear to Giscard d'Estaing, in her eyes only capable of holding a "center position," Mrs Garaud had long thought that only Chirac could propose to the country "a policy of vigor."

A landowner in Poitou where she was born in 1934, familiar with the chateaux, the local hunts, the great dressmakers and the antique dealers, Mrs Garaud, at home with intrigue, soliciting favors, and the clandestine, perhaps wants to show by

her public appearance that the era of the Gaullist republic's backroom politics is over and that both action in the light of day and being its star are now tempting her.

Devoted Adviser

Paris LE MONDE in French 23 Sep 80 p 9

[Article by Andre Passeron: "Mrs Garaud: Soviet Hegemony Constitutes a Menace to Our Independence"]

[Text] For more than ten years politicians and the majority of journalists have been deceiving themselves, or have been deceived. Ms Marie-France Garaud was not the mysterious and wise 'eminence grise', the redoubtable though obscure personality, the hidden and influential power instigator they had believed (LE MONDE, 20 Sept). The former colleague of Georges Pompidou and Jacques Chirac spent 90 minutes last Sunday 21 September explaining to the Press Club that she had only been an adviser, devoted but discreet, to a head of state, two prime ministers, and the president of a major party. With a frankness and modesty honoring her former profession, she reduced the role assigned her, mistakenly she assured them, to the most reasonable proportions. The responsiblity of the adviser pales before that of the advised. Today, demythifying her role to the point of destroying her own legend, she affirmed herself to be 'politically free and independent', committed only to herself. While claiming to speak as a 'man in the street', she didn't hesitate to peremptorily judge those politicians whose language didn't suit her, and she denounced, somewhat audaciously, 'the artificial, false and snide aspect of political debate.' Why didn't she do this when she "had influence"?

In any case, Mrs Garaud is animated by the certainty, and that one only, a sort of projected idea around which she orders all her reasoning; the western democracies, and France in particular, are threatened by expanding Soviet hegemony especially as expressed through the Communist party. But hasn't she been saying this for years both publicly and privately? Today she adds that France must tighten its bonds with England and the United States, risking the reproach of a return to Atlanticism.

Ignoring the fact that the Gaullists and a good many others too have been saying the same thing publicly for quite some time, Mrs Garaud affirmed that it's "all wrong" to put the question in any other terms. The former adviser doesn't renege on this act of faith around which she orders all her argumentation. An argumentation which tends to inflame again the fright that used to be inspired by "the reds" or "the Soviets". Thus, although "respectfully" saluting the candidacy of Debre, Mrs Garaud regrets that the former prime minister favors economic recovery of the country over saying "zut" to Soviet hegemony and affirming the priority of political recovery.

It's something of a "yes, but...." that Mrs Garaud accords Michel Debre. To Giscard d'Estaing she gives more a "no, because..." this "intellectual mathematician" had had "utopian ideas"--which he had not revealed to the electorate of 1974--about integrating France into Europe. Thus she judges him too complacent with respect to the Soviets. For Jacques Chirac, it's a sorrowful yet still friendly "Alas!" that she addresses to him to reproach him, however gently, for his present silence.

Dodging, eluding too pointed questions, frequently putting questions herself to her interviewers, sometimes characterizing their questions as "puerile," Mrs Garaud had tried to recreate some mystery by using the pronoun "we"--without further detail--in speaking of "those who think as I do" or by replying "you'll see" to questions relating to her future plans. She also thought she could affirm "Democracy defends itself with truth," forgetting that political advisers have often enough bent the truth. Two questions during the debate did not receive much clarification. "Why did you invite me?" asked Mrs Garaud. "Why did you accept?" retorted her interviewers. No one knows any reasons for this unusual dialogue.

Here are some of Marie France Garaud's principle remarks on the following subjects:

Giscard d'Estaing

"I deeply believe that the president of the Republic has made a political analysis in which he thinks the policies he follows are in the interests of France (...) I ask if we are not deceiving ourselves about the nature of the Soviet world. This is not a world like the others. The Soviet world is not directed by Brezhnev or Gromyko. There is no communism with a human face. Communism has no face! If we believe that in dealing with Brezhnev or Gierek we are in touch with those who will resolve problems, then I think we are wrong, we are making a serious mistake (...)

In 1974 Giscard d'Estaing was the only one who could beat the candidate of the leftist coalition who were bringing in communists in their train. If it were to do again, I would do it. But he was elected because he had a dream for France.

If I were to reproach Giscard d'Estaing for anything, it would be that he did not tell us then the dream he had for France. This is what seems so serious to me. I believe--intellectual mathematician that he is--that he sees France as a middle-ranking, average country--representing 1 percent of I don't know what--and a middle-ranking country cannot be governed. How does a mathematician make a middling country great? By putting it in a group. That's globalization. I really believe that the European construction was the dream towards which the president of the Republic was leading France. He thought to be the man who led France from its French phase to its European phase. I think this is a Utopian idea because the key to Europe is not held by France but b y the Soviets because of the partition of Germany.

Jacques Chirac

I am no longer close to Jacques Chirac because he is keeping silent. I have been listening with an ear which friendship renders attentive, but I am hearing nothing. Nothing on Afghanistan, nothing on Venice, nothing on Warsaw, and I think these are subjects--when they concern the freedom of people or the independence of France--about which there can be no tactics. It's as though you should say General de Gaulle should have waited until 1943 to say it was necessary to resist. I have distanced myself from Jacques Chirac because of political questions which will not compromise, I believe, the friendship we have for each other. So I'll say nothing more. (...) I have decided not to participate any more in a political action in common with Jacques Chirac for reasons which I think are evident.

Michel Debre

I greet with respect Michel Debre's candidacy. This puts the debate on a level of dignity and principle. He approaches the problems in a highly principled and respectable manner. (...) I have the impression that for Debre economic recovery will be somewhat conditional on political recovery. Personally, I think politics primes economics. We shouldn't be saying "give us the economic means for political recovery." I think we ought to decide on an independent politics, decide on it, and give ourselves the means later. When Tito decided to say "zut" to the Soviets, he didn't ask himself if he had the economic means. He decided to do it and he did it.

Mitterand

I am astonished that Mitterand, who is intuitive, has not become aware that he is hanging around just a little too long. Also, I think Mitterand is saying "You don't know who the candidate is, but I know." And I'm asking if I don't know too. That's what will stop the game.

Mrs Garaud, questioning the articles that have appeared about her, declared "I ask myself, excuse me sirs and madame, if they would have been the same if I had been a man. Can a woman be active in politics without being used or being a conniver?"

The woman journalist replied, "Yes, by running for office."

Why Become Candidate

Paris LE NOUVEL OBSERVATEUR in French 27 Sep-5 Oct 80 p 37

[Article by Georges Mamy]

[Excerpt] "I hope I shall not be reduced to such an extremity!" At the microphone of Europe 1, Marie-France Garaud denied the suggestion that she might herself become a candidate. She didn't want to say more. "You'll see," was the tenacious response to attacks from the Press Club, then she said "I will do everything possible, we will all do whatever is possible so that the problem will be stated" in the terms she had just sketched out. To "Who? What? How?" she responded with her smile and her stubborn look.

There must be something to this method, for she thus succeeded in mastering the inhabitual, aggressive, turbulent emotion--for a moment the debate was hardly audible--which that day had taken hold of some journalists. "Can't a woman engage in politics without being a conniver or being used?" Mrs Garaud finally shot out. True, at that moment she was aiming beyond the circle of her questioners. But she succeeded in planting the idea that she was being handled more roughly than if she had been a man.

And her charm played its role, especially on those who had not before seen or heard her, especially the men. A prime example, Serge July who, describing in LIBERATION the "launching of a new political star" did not hide his emotion: "In the desert of archaic French politics, her simple presence (...) seemed to bring life to this production, political though it may be." Martine Gilson of

this paper replied sharply on 25 September "tender, seductive, the limits of fascination (...) a fascination long suppressed, finally bursting out, of the authoritarian, crushing bourgeoise doll.

With this family quarrel, all the ambiguity--cultivated--of this personality is illustrated. Once more, Marie-France Garaud sows among the politicans irritation, envy, admiration, and doubtless hate.

The Elysee didn't like it at all, understandably. The reproach directed to the powers that Soviet hegemony had not been denounced strongly enough was judged "irresponsible."

The RPR was embarrassed. They pretended not to have heard what was perhaps the most terrible words of the interview: "I am no longer close to Jacques Chirac..." A silence. "Because he keeps silent. I have listened with ears sharpened by friendship, but I have heard nothing. Nothing on Afghanistan, nothing on Venice, nothing on Warsaw. Nothing that can be remembered." No, statements on Moscow's hegemonism were not found to be very penetrating or profound, the RPR, it seems, has said such things before her, and dates and citations were offered.

Michel Debre was deeply disappointed. Mrs Garaud had certainly saluted his enterprise "respectfully", but she had criticized his method; he puts economic recovery in first place, she maintains that diplomatic recovery, "resistance" as she calls it, ought to be first. Almost a disavowal.

So, what is she going to do now? Even those striving to be indifferent are asking themselves this question. An anticommunist or anti-Soviet rally? It has even been said she is inspired by the former Deat collaborator, Georges Albertini, whom she knows. "Oh, now, I don't deserve that..." she protested. Or else the "we" she used all during the broadcast means more than the usual Pierre Juillet and herself? "More than that...."

What is most likely is: after having spoken she will write. She regrets too much not having said clearly enough in what way, according to her, Giscard's policies are leading to the establishment in Europe of a "neutral lake from the Atlantic to the Urals", the transformation of France into a sort of Switzerland. But caught up in the political mill, will she go yet further? This woman who, before, defended her need for personal liberty by citing Gobineau's last words on his death bed: "There is love, there is action, and then nothing."

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COUNTRY SECTION FRANCE

TRIPARTITE DEVELOPMENT OF ASSM NOTED

Paris AIR & COSMOS in French 8 Nov 80 pp 34-35

[Article by Pierre Langereux: "AEROSPATIALE Determined to Produce Operational Second-Generation Sea-Sea Missile Before End of Decade"]

[Text] The program to develop a second-generation sea-sea ASSM [Antiship Supersonic Missile] in tripartite French-German-British cooperation through the GIE ASEM [AEROSPATIALE [National Industrial Aerospace Company] - MBB [Messerschmitt -Baldow-Blohm] - BADG [expansion unknown] Economic Interest Group] is in financial trouble.

Cuts have been announced, especially in the British defense budget, which could slow down the ASSM program. The British position is expected to be clarified this March-April.

However, AEROSPATIALE is determined, come what may, to market before the end of the decade a second-generation sea-sea (supersonic missile to succeed in due time the first-generation antiship missiles of the Exocet family, according to Mr Michel Allier, manager of AEROSPATIALE's Tactical Missiles Division.

AEROSPATIALE, which is responsible for the ASSM's guidance system, is also working on technological development in the ramjet propulsion domain, except as regards a solid-fuel formula (a borium-doped powder) which has been entrusted to MBB.

AEROSPATIALE has had long-standing experience with ramjets. Specifically, it is responsible for the development of the (kerosene-propelled) ramjet of the future ASMP [Medium Range Air-Surface] missile for the Tactical Nuclear Force--which is also the only integrated-accelerator ramjet-propulsion missile being built outside the United States (and the USSR).

Pending the production of the ASSM, the Exocet family of missiles will enable AEROSPATIALE to continue its penetration of the market for first-generation (subsonic) antiship missiles.

Exocet missiles have the advantage of being autonomous missiles (fire and forget) that are used like ammunition (18 months between periodic inspections), whose range of 70 km without resetting in flight (hence not subject to jamming) is compatible with a high probability of target hits (94 percent proven in 110 test firings).

While retaining these tested features, AEROSPATIALE is nevertheless preparing to bring out further improvements in some Exocets, in the form of "advanced" models of the MM 40 and AM 39. The modular design of these missiles lends itself specifically to improvements in their performance, especially as regards their ability to penetrate defenses, according to Mr Allier. These modular improvements will be introduced within the next 5 years, culminating in improved MK 2 and MK 3 versions of these two missiles.

The missiles of the Exocet family have been adopted and ordered by 24 different countries including France, which is the only country that has equipped itself with the four existing versions, although two other foreign countries have ordered the three sea-sea and air-sea versions. The MM 38 sea-sea missile has now been ordered by 18 countries, and the AM 39 sea-sea by 5 countries. The SM 39 undersea-sea missile is currently used only by the French Navy.

AEROSPATIALE has thus received orders for 1,500 Exocet missiles to be installed on more than 200 ships. The 1000th Exocet was just delivered recently.

But AEROSPATIALE is negociating with other clients. Five or six countries are now about to be booked and AEROSPATIALE expects to add another 12 or so new clients to its list during the 1980's.

The Roland, 1980's Workhorse

The Franco-German Roland low-altitude surface-air missile program, designed by EUROMISSILE (AEROSPATIALE and MBB), is also having budgetary problems as regards mass production for Germany (for the Luftwaffe) and the United States (see AIR & COSMOS No 831). In Germany, this is owing to the large amount of funds that has been allocated to two other programs (AWACS [Airborne Warning and Control System] and Tornado). In the United States, the problem stems from the credits allocated to another "Made in USA" surface-air missile program (Patriot).

These budgetary difficulties undoubtedly threaten to slow down the schedule for putting the Roland weapon system into operation in those two countries but, in Mr Michel Allier's opinion, will not adversely affect the program. We recall that the French and German ground forces have already placed large orders for Roland to be used for anti-aircraft defense by their armored units.

Production at the Bourges plant continues normal. AEROSPATIALE has just completed delivery of its sixth lot of Roland missiles, the final acceptance test firing having been successfully accomplished on 30 October. We recall in this regard that the acceptance conditions are very severe: They will not tolerate more than one failure in the 10 missile test firings sampled from each missile lot. Two advance production lots (290 missiles) and four final production lots (655 missiles) were thus accepted.

Mr Allier has indicated that AEROSPATIALE is even going to increase its Roland production rate from 200 missiles per month in the fourth quarter of 1980 to more than 350 missiles per month in 1981 and to 450 missiles per month by the end of 1981, to meet "urgent delivery" commitments.

To date, the Roland weapon has been ordered by six countries: France, Germany, the United States, Brazil, Argentina and Norway. This may not seem like much compared to other low-altitude surface-air weapon systems currently on the market. But the manager of the Tactical Missiles Division predicts that the Roland will be AEROSPATIALE's 1980's market workhorse, owing to its performance characteristics and its price.

The C 22: In Service by End of 1982

Another new product of the Tactical Missiles Division that could find a large market is the C 22 variable-speed subsonic target-missile. The missile underwent its first two test flights in June and July 1980, and the third flight is scheduled to take place in a few days at the Landes Testing Center. These flights are designed to provide an evaluation of its performance characteristics and to test the guidance and recovery systems. Towed-target tests will commence in 1981. The C 22 is designed to tow one large target (2.10 m long) or two small targets (1.20 meters long). These targets are currently under study.

The C 22 is scheduled to be put into service by the end of 1982 over French firing ranges (CEL [Landes Testing Center], CEM [Mediterranean Test Center], etc), in a version equipped with a guidance system that uses the infrastructure of these firing ranges (radars, etc.). They will be equipped with a Thomson-CSF remote control.

Another version of the C 22, equipped with a new TTL (combined remote control, rangefinder and localization) guidance system designed by the LCT [Central Telecommunications Laboratory], will be placed in service 1 year later, by the end of 1983.

The C 22, which is designed for training in the firing of air-air and surface-air missiles, will replace AEROSPATIALE's CT 20 target-missile, of which 1,450 have already been sold and which will continue being manufactured until the new target-missile is out. AEROSPATIALE expects to produce the C 22 at the rate of some 100 missiles per year. The C 22's chief competitors are the American Chukar 2 target-missile by Northrop, a poorer performer but currently being produced in large numbers, and the VSTT, alias Striker, by Beech, which is currently being completely remodeled and which, notably, is equipped with the same Microturbo TRI 60 engine as the C 22.

[see table next page]

AEROSPATIALE MISSILE ORDERS

(at 1 July 1980)

	Number of Missiles	Percent for Export	Number of Countries
Missiles in production:			
Exocet MM 38	1,196	87	18
Exocet MM 40	339	76	8
Exocet AM 39	201	65	5
AS 30 Laser	4	--	1
Milan	110,700	69	18
Hot	32,363	85	12
Roland	14,329	65	6
CT 20	1,450	21	
SS 12/AS 12	9,219	79	
SS 11/AS 11	174,713	58	
Missiles whose production completed:			
SS 10	29,000		
EN TAC	119,000		

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COUNTRY SECTION FRANCE

AIR FORCE TO GET 72 AIRCRAFT DURING 1981

Paris AIR & COSMOS in French 8 Nov 80 pp 27, 42

[Text] If the Air Force equipment delivery program, as it appears from a reading of the 1981 draft defense budget, is adhered to, the Air Force will take delivery next year of a total of 72 aircraft, as follows:

--37 combat planes: These would consist of 28 Mirage F 1's for air defense and 9 Jaguar A twin-jet single-seaters. These 9 planes will conclude the Air Force's Jaguar program. The Air Force will thus have acquired 200 planes of this type, whose weapons and performance have been very substantially improved since the arrival of the first Jaguars at the CEAM [Military Air-Experimentation Center] in May 1972 and the delivery, in June 1973, of the first military planes of this type to the 7th Squadron based at Saint-Dizier;

--33 Alpha Jet trainers for the Training Command. By the end of 1981, 97 Alpha Jets will have been delivered and put in service by the Air Force. "The Alpha Jet program is on schedule," according to Mr Loic Bouvard, one of the draft defense budget committee chairmen, who indicated, however, that "the last 9 planes (of a total of 175) under the program will be ordered during fiscal year 1981." We recall that the Air Force's requirements had been estimated initially at 200 planes;

--2 Transall C-160 transport planes of the latest series. It is noted in this regard that the draft 1981 defense budget shows 5 planes (for a total of 25 since the start of the program) having been ordered, and not 8 as had been expected (the 3 additional ones are being financed by the Ministry of PTT).

The Air Force will also take delivery next year of 56 20-mm twin-barreled anti-aircraft canon (which will enable the equipping of 5 or 6 air bases), 110 Matra Super 530 air-air missiles, 4 sections of Crotale surface-air missiles (each section consists of 2 firing units of 4 missiles each), and 3 Centaure (low-altitude detection) radars.

As regards orders planned for 1981, we recall here the main ones: 22 Mirage 2000 (a total of 48 planes of this type have been ordered to date; the first 8 are scheduled for delivery in 1983); 21 Mirage F 1 to compensate in part for the

delay in the Mirage 2000 program; 9 Alpha Jets (see above); 6 Aladin radars; some 30 Epsilon trainers; 5 Transalls (see above); 200 Crotale missiles; 56 Cerbere twin-barreled anti-aircraft canon (a total of 208 have been ordered, whereas the 1977-1982 program budget had provided for 152); 110 Super 530 air-air missiles; and 15 ATLIS nacelles for laser-guided air-surface missile firing practice.

The chairman, speaking for the National Defense Committee for Title 5 of the 1981 draft budget (Air Section), indicated that in its estimation:

--the current delay in the Mirage 2000 program is one of the most critical points in the Air Force Title 5 of the draft budget;

--"the Air Force programs still show a delay of 1 to 2 ywars, particularly insofar as concerns forces environment and electronic warfare" (as regards project authorizations, the delay is estimated at 2 billion francs this year);

--"the military air transport problem is still a matter of concern, in that the addition of 25 Transalls, even though refuelable in flight, does not appear to be adequate to meet the long-distance transport needs of the French forces of intervention."

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COUNTRY SECTION FRANCE

NAVAL OPTRONICS ADVANCES OUTLINED, EXPLAINED

Paris AIR & COSMOS in French 8 Nov 80 pp 32-33, 42

[Article by Pierre Langereux]

[Text] Optronics systems (television, infrared and laser) are currently undergoing an unprecedented development in France, particularly as regards naval applications, as was evident at the 1980 Naval Exposition in Bourget, where a large amount of equipment, under development and in service, was on display.

The French Navy has in fact decided to install optronic sensors and systems on all its surface vessels and submarines, beginning with the most modern (corvettes, frigates, aircraft carriers and nuclear submarines). Specifically, it has just[1] adopted three new infrared systems (VAMPIR [Infrared Panoramic Air and Sea Surveillance], PIRANA [Infrared Naval Gun Layer] and PIVAIR [Integrated Infrared Surveillance Periscope]), which will complement the panoply of other optronic systems already in service or undergoing sea trials (CONDOR [Optronic Camera for Night Radar Target Designation], TAON [Optronic Naval Gunnery Rangefinder], TOTEM [Optronic Naval Gun-Directing Turret] PANDA, IRDAR [expansion unknown], etc.). France is thus the first Western power to have generalized the use of optronic systems aboard its naval vessels.

The studies that have been carried out over a period of several years by the DTCN [Technical Directorate for Naval Construction] and by industry have now, in 1980, culminated in ship-borne optronic equipment capable of performing all the functions required to operate naval weapons: surveillance, detection, identification, localization, range finding, fire direction and control, guidance, etc.

Anti-Missile Warfare

One of the principal applications of optronics in the Navy is its use in systems against anti-ship missiles. Optronic systems actually have many advantages over radars: security, insensitivity to electromagnetic jamming and to image effects, potential for overcoming saturation effects, etc. Several systems have been developed to DTCN (STCAN [Technical Service for Naval Construction and Ordnance]) specifications.

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1) See AIR & COSMOS No 832.

The VAMPIR, designed by the SAT [Telecommunications Corporation], is a passive infrared surveillance antenna (at 4- and 10-micron wavelengths) stabilized against roll (up to 30°), making it usable even on small vessels.

This continuous panoramic surveillance system can detect and rapidly localize any naval or air target (at low or medium elevations) and particularly antiship missiles traveling at wave-heights (sea skimmers). Its detection range against planes or frontal-attacking missiles is greater than 10 km. Integrated into an optronic fire direction and control system, the VAMPIR provides, within 1 mrd of elevation and relative bearing, the target localization needed for the initial aiming of an optronic tracking device (TOTEM or IRDAR). The signal processing equipment, designed by the CSEE [Signals and Electrical Enterprise Company], reduces the "false alarm" rate (to the order of 1 per hour). Complementary signal processing work is also being done by the SINTRA [Company for New Radio Techniques]. Beginning in 1984, the VAMPIR will be installed aboard all corvettes and first line vessels (F 67 and Colbert-class frigates and aircraft carriers) in the French Navy.

The PIRANA, designed by the SAT, is a passive infrared acquisition and tracking deviation indicator, highly accurate against air targets and particularly so against sea-skimmer missiles. Coupled with a radar or optronic (VAMPIR) surveillance system, the PIRANA 2 system tracks simultaneously on two infrared wavelengths (4 and 10 microns), enabling it to avoid being decoyed and to adapt to atmospheric propagation conditions. It provides the instantaneous target elevation and relative bearing coordinates continuously to the fire direction and control function. The high sensitivity and very fine angular resolution of this deviation indicator provide an acquisition range of up to 10 or 20 km against a plane or missile (depending on type). The PIRANA 2 will also be installed aboard the corvettes and first-line vessels of the French Navy, beginning in 1984.

The CONDOR, designed by the SINTRA, is a television camera for use with the radar gun director on 100-mm guns aboard French Navy ships (frigates, corvettes and avisos). This camera provides acquisition and tracking of airborne (plane and missile), seaborne or land targets by means of two separate optical systems involving a daytime (300 mm focal length) lens and a nighttime (very long focal length) lens. Used with a television deviation indicator, the CONDOR can provide automatic tracking of targets.

The TAON, alias TMY 83, designed by the CILAS [expansion unknown] (of the CGE [General Electrical Company] group), is a laser rangefinder-illuminator (1.06 microns) for use with French Navy radar or optronic (TV or PIRANA) gun directors in place of the optical rangefinder and crew. This lightweight system (13 kg) measures distances (between 500 and 20,000 m) with high accuracy (± 5 m) to all airborne (plane or missile), seaborne or land targets. The TAON is secure, insensitive to sea clutter and image effect, and difficult to jam because of the directivity of its laser beam.

Optronic Fire Direction and Control

These various optronic sensors can be used in "mixed" fire direction and control (multisensor) systems, combining radar and optronic means, or in "lightweight" all-optronic systems (VOLCAN [Lightweight Optronic Sight for Fire Direction and Control of Naval Weapons], TOTEM, NAJA, LYNX). In this category as well, many systems have been or are being developed.

The TOTEM, designed by the CSEE, is a lightweight (320 kg) gun director combining three optronic sensors--the CONDOR TV camera, TAON laser rangefinder, and PIRANA infrared deviation indicator--into a fire direction and control system (primary or secondary) for small- or large-caliber guns. It enables acquisition and accurate automatic tracking, day or night, of any airborne target, including sea-skimmer missiles. The French Navy has completed sea evaluation of the TOTEM system prototype, which will now go into production. We recall that the CSEE also designed three other fire direction and control systems. The PANDA is a stabilized line-of-sight optical set for air and surface surveillance, tracking and fire direction and control, 200 of which have already been ordered by the navies of 16 countries[2] including France. The NAJA is the optronic version of this system, using optical, television and laser (the CILAS's TMY 113) sensors for surveillance, automatic tracking and fire direction and control; this system has been ordered by four countries (Argentina, Uruguay, Senegal and Malaysia). The LYNX is a lightweight (195 kg) optical set for surveillance and target designation, 16 of which have been ordered by three countries.

The VOLCAN, designed by the SAGEM [Company for General Applications of Electricity and Mechanics] in cooperation with the CILAS, SAT, CSEE and SOFRETEC for sensors, is a gyroscopically stabilized optronic sight prototype, intended for use aboard all types of ships. It provides, night and day, simultaneous navigation, surveillance, observation and identification of airborne targets (planes and missiles), as well as fire direction and control for smaller weapons. It is a lightweight optronic sight, weighing 80 kg and consisting of a television camera, an infrared camera (8-12 microns) of the CADET type made by SAT, a laser rangefinder (20-Hz YAG) of the TAON type by CILAS, and an automatic tracking device.

The IRDAR, developed by SAT, is a gun director designed for the defense of surface vessels agains attack from the air. It operates like a radar but at an infrared wavelength. It includes a carbon gas pulsed radar (10.6 microns) and a heterodyne receiver using a continuous CO2 laser as a local oscillator. The optronic turret is also equipped with a passive infrared deviation indicator (PIRANA) and/or a TV camera. The IRDAR has a scanning system that enables the acquisition of a target that has previously been designated by a radar or optronic (VAMPIR) surveillance system. It automatically tracks the designated target--plane or missile--furnishing elevation and relative bearing with a high degree of accuracy

2) France, Germany, Spain, Portugal, Belgium, Morocco, Libya, Peru, Greece, Abou Dhali, Nigeria, Argentina, Bahrain, Uruguay, Senegal and Malaysia.

(better than 0.1 mrd) as well as the distance and speed of approach. This high-performance fire direction and control equipment, featuring security, relative insensitivity to jamming, insensitivity to image effect, and operating in a favorable atmospheric frequency band, can replace conventional radars aboard ships.

Missile Guidance

Optronic sensors are also used in missile guidance.

The studies carried out by the DTCN on "100-mm gunnery terminal guidance" have culminated in the development by Thomson-Brandt, under the aegis of the DTEn [Missile Technology Directorate] (STET [expansion unknown]), of a missile that is guided by a passive infrared automatic director made by the SAT.[3] This missile, of "very innovative" conception according to the DTCN, can be fired by the Creusot-Loire 100-mm turret canon (conventional or compact), 200 of which have already been sold to the French and foreign navies. This 100-mm terminal-trajectory-correcting missile is the first European gunnery missile to be equipped with an automatic director providing increased effectiveness against all low-flying air targets, including sea-skimmer missiles.

Underwater Optronics

The application of optronics is not being limited to surface vessels. The DTCN's work has shown the validity of thermal imagery combined with underwater periscopes for defense and attack, especially with regard to nighttime observations and during difficult atmospheric conditions.

The PIVAIR, designed by the SAGEM in cooperation with SOPELEM [Optics and Precision Mechanics Company] and SAT, is an infrared (8-12 microns) thermal-imagery surveillance and attack periscope that enables observation and identification, nighttime and daytime, of surface and shore targets, as well as detection of ASW [Antisubmarine Warfare] planes. It can identify a ship at night at a distance of more than 10 km. It is the only thermal-imagery periscope under development in Western navies.

The PIVAIR program provides for the development and fabrication of these new surveillance and attack periscopes to equip all French Navy submarines under construction or refitting, according to the DTCN. They will be installed on conventional submarines as well as on nuclear submarines, that is, the SNA [Nuclear Attack Submarine] and SNLE [Nuclear Missile-Launching Submarine], of the French Navy. The first PIVAIR will be installed on the second SNA and its successors; the first SNA will then receive the PIVAIR to replace its Type K periscope. The SNLE's will be equipped with it beginning with those carrying the new MSBS-M4 strategic ballistic missile.

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3) SAT automatic directors are already installed on MAGIC air-air and SATCP surface-air missiles.

9399
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COUNTRY SECTION FRANCE

NEW COMPUTER TO BE TESTED FOR USE IN MEDICAL DIAGNOSIS

Paris LE NOUVEL OBSERVATEUR in French 22 Nov 80 p 63

[Article by Fabien Gruhier: "The Knock Computer"]

[Text] At any moment now, a decision may be forthcoming. Nothing has been signed yet. "But it is well on its way," says Prof Pierre Lenoir. The General Directorate of Telecommunications will provide 40 terminals next year at Rennes, to test the world's first computer-doctor. A prototype is already practicing medicine in a convincing manner in a Pontchaillou Hospital attic. You type on a typewriter-like keyboard the symptoms you have observed and you wait 7 seconds. Professor Lenoir apologizes for this annoying delay: "It is temporary, you understand. Our present computer has only a limited calculating capacity. When we have the real machine, the response will be instantaneous." But the 7 seconds are up and the printer is spewing out the verdict, or rather the possible diseases in order of probability.

"We have observed each other working," says Professor Lenoir, chief of computerized medicine at Pontchaillou, "and have dissected the mental operations that lead to diagnoses," to ascertain their adaptability to data processing techniques. Surprise!: Data processing appears particularly suited to the formulation of medical diagnoses. Once the information concerning the patient has been gathered through examination and questioning, the various symptoms must be linked together to bring forth all the diseases that could encompass the largest possible number of them. This is a frighteningly complex combinatory process for the human brain, even a highly developed one, but a mere trifle for the first computer to have been built for this purpose. "It is a very difficult process, since medicine is learned in one manner and applied applied inversely. At medical school, all diseases are discussed, together with their symptoms. But let us consider that at least 400 are known to cause swelling of the spleen. Now, in dealing with a patient, one must start with the symptoms and must work back to the disease. The 'file' must be inverted, which a machine can do automatically."

We almost end up being amazed that doctors have been able until now to treat us without resorting to a terminal. "The vast body of knowledge that must be assimilated today is becoming alarming," says Professor Lenoir. "The need for a machine will soon be evident: The productiveness of training is diminishing. Doctors will no longer be able to lose time assimilating things they have very

little or no probability of encountering in their particular practice." Doctors will undoubtedly soon be following the example of lawyers--who no longer pretend to know all the jurisprudence by heart, and do not consider it humiliating to consult the Code in front of their clients--and will be turning to the computer as their aid.

The mental capabilities of the Pontchaillou computer already outclasses those of any human practitioner: It can identify a total of over 2,200 diseases, each with its tens or hundreds of symptoms. That is already 10 times as many diseases as are dealt with during an internship. We are continuing to enrich our data bank without letup. We can go up to 5,000 diseases."

Is that not a bit many? Will the Knock computer be attributing a disease to every seemingly healthy individual? "Experience has shown that the best doctors are those who, after analyzing the symptoms, come up with the largest number of possible diseases from which they can then choose, in an advised manner, through supplementary tests."

For 14 symptoms fed into the machine by their code numbers, the printer will name, for example, two diseases that account for 13 of the symptoms, four that answer to 12 of the symptoms, 8 for 10 of the symptoms, and so on... up to 233 diseases that may account for two of the symptoms. "It is very easy to see when the machine starts to ramble." The art of the physician, like that of the computer, is to optimize and delineate a plausible pathology that takes into account the largest number of significant signs. Never all. "There are always too many. There are the unexplainable 'stray' symptoms." One disease alone may not be the entire answer. Sometimes two or three mysteriously concomitant ones may need to be considered. The smallest possible number, however. The easy solution would be to attribute a specific disease to each symptom. The ideal one is to find a single disease that best fits all the observations.

The omniscient calculator now broadens the spectrum, suggesting to the doctor any rare disease he may not have thought of and increasing his chances of discovering the right answer to the enigma. "People are now traveling a lot. At Rennes, two thirds of all parasitoses diagnosed are of exotic origins." These diseases, unknown to the local physician, are stored in the electronic memory, thus also coming to the aid of the student. "In my day, each intern had 12 beds and 12 patients," Professor Lenoir sighs. "He had to deal with quite a number of cases. Today, he has to be happy with four." The abundance of students induces a scarcity of patients. The wonderful Pontchaillou machine's arrival on the scene is therefore timely. It will permit medical students to practice on scores of imaginary patients.

Next, the Treatment

To test the reliability of the system--baptized the ADM [Medical Diagnostic Aid]--the Rennes staff searched the archives and used the symptoms recorded in the files of former patients. Result: In 93 percent of the cases, the ADM provided as good a diagnosis as had the doctor or a better one. Furthermore, it would have permitted a 63-percent saving on supplementary tests and analyses, since, for each

disease it proposes, the printer indicates the surest and the most anodyne test criteria. "In any case, the computer always justifies its response. It is no more than a gigantic encyclopedia that flips itself open to the right page," says the ADM's creator, endeavoring to make his toy seem commonplace and avoid a situation of rejection. "We are not trying to replace physicians with machines. We are only trying to help them."

There remains the problem of integrating these machines, little by little, into the doctors' office routines. The first 40 recipients have not yet been selected. "We will put together as representative a sampling as possible. Then we will wait at least 2 or 3 years to study reactions. Will the doctor interrogate his machine in front of his patient? Or will he hide his terminal in a closet?"

If all goes well, extensive distribution will start in 1983. Professor Lenoir remains cautious: "All we need do is present the ADM at a congress and have it not work beyond the first 5 minutes to bring down upon us a cloudburst of criticism..." But this white-coated revolutionary intends to win the game. He is already working on the next phase: the ATM [Medical Therapeutic Aid], a program he is developing that will not stop at the diagnosis but will also prescribe the treatment. Pending a new order of things, however, the computer's prescription will still have to be countersigned by a physician...

9399
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COUNTRY SECTION SPAIN

CHANGING BLUE-COLLAR ATTITUDES TOWARD LABOR ORGANIZATION

Survey of Poll Results

Madrid CAMBIO 16 in Spanish 26 Oct 80 pp 22-27

[Text] For whom will they cast their vote? Judging from the results of a poll taken by the INI [National Institute of Industry] Foundation, under the direction of Prof Victor Perez Diaz, it is quite likely that the differences between the two leading labor federations, CCOO [Workers Commissions] and UGT [General Union of Workers], have been reduced and that influence on labor is evenly divided.

Because the ordinary worker in Spain is a very realistic person, who does not go looking for additional complications when burdened with an economic crisis. He believes that the Federal Republic of Germany is where the workers have more power; he is, for the most part, opposed to mobilizations; and his category is divided into two sides, those advocating trade union unity and plurality.

At least all this represents the conclusions arrived at from the poll taken last July, the interviews for which were held by the specialized firm, Emopublica, under the auspices of the INI Foundation.

The poll, with a reliability index for the sample as a whole of 95.5 percent, and a margin of error of + or - 2 percent, was taken by means of interviews with 2,400 wage-earners from industry.

A Reliable Poll

In order to reduce the margins of error, six industrial sectors were chosen: mining, food and beverages, textiles and hides, chemicals, metal and construction, which cover a total of 2,893,855 wage earners out of the 4.5 million persons comprising the total industrial population. Excluded from the poll were the paper and graphic arts, lumber, water, gas and glass sectors since, owing to their similarities to the respective branches of industry analyzed, it may be inferred that they would not change the overall data and percentages.

The interviews were held on the job sites, after permission had been obtained from the firm to hold them during the work day. The INI Foundation's Sociological Research Program was responsible for devising the questionnaire, and for tabulating and analyzing the results.

The workers' thinking was not known, and a previous poll taken by the National Institute of Industry (see CAMBIO 16, No 403) made note of the surprise at discovering how closely attuned the Spanish wage earners were in their political ideas, work satisfaction and cultural level to their European counterparts. It was ascertained on that occasion that they were moderate and, at the same time, contradictory. Now, it has been demonstrated that the moderation has continued, while the contradictions have lessened. Two years of union experience have made them more realistic.

One Out of Every Three Workers a Member

But the Spanish workers have become more skeptical, or at least they have not found the satisfaction that they had expected in the unions. During the past 2 years, the results have been a reduction in union membership, which has dropped from 56 to 34 percent. Only one out of every three is a member of a union: more or less the same as in France or Italy.

And the union which appears to have most disappointed its followers is CCOO, whose membership has been cut almost in half (from 31 to 16 percent); while the UGT membership has declined from 13 to 10 percent. When members and sympathizers are added, one observes the current trend toward balance between the two leading federations; whereas in 1978 the communist union had twice the influence of the socialist one.

It will prove difficult to learn the causes for that attrition, and the union leaders will unquestionably analyze it. But, when one combines the responses from both in the poll, one can readily infer that the CCOO policy in recent times has not been associated with the workers' interests. The union itself suspected something of the sort when it held a meeting with the PCE [Spanish Communist Party] marked by harsh self-criticism, following the first electoral setbacks.

'No' to Mobilizations

The policy of mobilizations and strikes has been extensively debarred by the industrial workers who were polled. With rising unemployment, it is inappropriate. Only 12 percent replied that the union should organize mobilizations and pressure the government, while 62 percent cited the negotiation of contracts as a fundamental task for the union.

As for the strikes, it would appear that their results in past months have left a bitter, disappointing taste among those who took part in the conflicts. While 23 percent answered that the results of the strike were good, 29 percent replied that the outcome of the strike was counterproductive.

But even more revealing than this attitude of rejection for striking is the answer to the question, "under the same circumstances, would you go on strike again?", with 47 percent saying "no," as compared with 40 percent who said "yes." Hence,it should come as no surprise that the vast majority (64 percent) replied that strikes should be regulated by a law. According to over three quarters of the workers queried, strikes should only be used as a last resort, when all possibilities of negotiation have been exhausted.

And, speaking of negotiation, the opinion of the workers as to who should negotiate the collective contracts has changed substantially during the past 2 years. The

confidence in the company committee as a preferred instrument for discussing the contract has disappeared. The committees appear to have failed in this assignment, and those polled prefer that it be the union which does the negotiating.

The Union Rather Than the Committee

This major change of opinion is perhaps one of the most significant and noteworthy pieces of information derived from the study, and business owners and unions should take careful consideration of it in the future. Two years ago, 14 percent of those polled chose the committee over the union for negotiating the contract; today, with a difference of 32 percent, the labor federation was chosen over the committee as an ideal spokesman in the collective bargaining. Then what is the explanation for the nonmembership?

We must not forget that we are experiencing an economic crisis that has struck the entire society, especially the workers. This situation has made them become even more cautious. No one wants to swell the ranks of the unemployed.

So long as these conditions prevail, there is every indication that the worker will want to risk his job as little as possible; a job which, moreover, according to the responses that were given, he does not find uncomfortable, and he even likes to feel that he is part of the firm as a whole, and not at odds with the management.

The Mayority Loyal to the Firm

A total of 56 percent replied that there is a mutual interest in the business firm, as compared with 39 percent who deemed their wage earner status as being opposed to the interests of the firm. As for satisfaction with work, the highest positive answer, 82 percent, indicates that the pace of work is accepted by the workers, and that they consider the risks of occupational disease or accident to be minimal. Another response to be taken into account is loyalty to the firm. Only 10 percent of those queried would be willing to change companies under the same conditions and at the same wage.

The industrial workers want the union protecting them and negotiating in their place of employment. They rely on the union as a power, but at the same time they avoid direct commitment. Under these circumstances, the more a labor federation talks to them about mobilizations and strikes, the more they become dissociated from it; the more a federation stresses the need for negotiation to solve their problems by means of peaceful settlement, the more it will retain and even recover members within a short time.

Deep seated economic crises either result in a revolution or they cause a shift in the society and, with it, the workers, toward more moderate positions, and more toward the right. It is instinctive, to retain what one has, not to become involved in a revolutionary venture the possible outcome of which no one knows; and, at the same time, to prevent the solution from being an extreme rightwing dictatorship.

(1) **Afiliación sindical**

(2) Sindicato	(3) Sobre total trabajadores		(4) Sobre total afiliados	
	1980	1978	1980	1978
(5) CC. OO	16,3	31,0	48,3	54,9
(6) UGT	10,3	13,6	30,4	24,1
(7) CSUT	1,2	2,6	3,7	4,6
(8) USO	0,8	3,1	2,5	5,5
(9) CNT	0,8	1,4	2,5	2,5
(10) SU	0,7	1,7	2,0	3,1
(11) Otros sindicatos	3,7	2,9	7,3	5,2
(12) Total afiliados	33,8	56,3	–	–
(13) Total no afiliados	61,0	42,3	–	–
(14) NS., NC.	6,5	1,4	3,1	0,1

Key:

1. Union Membership
2. Union
3. Out of the total number of workers
4. Out of the total number of members
5. Workers Commissions
6. General Union of Workers
7. Confederation of Unitary Trade Unions of Workers
8. Workers Trade Union
9. National Confederation of Labor
10. Unitary Unions
11. Other unions
12. Total members
13. Total nonmembers
14. Don't know, no answer

(1) Convenios colectivos

(2) *¿Quién debe negociar los convenios?*

	(3) Negociador real en su empresa		(4) Negociador ideal	
(5)	1980	1978	1980	1978
(6) Centrales sindicales	33,8	34,6	42,9	21,7
(7) Comité de empresa	33,7	33,6	10,9	35,4
Comisión mixta (sindicato-Comité)	14,1	10,7	34,1	16,6
(8) La asamblea	2,6	6,5	4,0	13,4
(9) Otros	0,1	3,0	1,5	2,9

(10) *Cuando el sindicato negoció su convenio, ¿qué sindicato fue?*		*¿Cómo resultó el convenio?* (12)	
UGT	77,8		
CC.OO.	76,9		
USO	18,6	(13) Bastante razonable	39,1
CSUT	4,4	(14) Mediocre	38,7
CNT	2,8	(15) Inaceptable	15,9
SU	2,5		
(11) Otros sindicatos	13,9		

(16) *Nota: El complemento a 100 por 100 corresponde a «No sabe, no contesta».)*

Key:

1. Collective Contracts
2. Who should negotiate the contracts?
3. Real negotiator in your firm
4. Ideal negotiator
5. Union federations
6. Company committee
7. Joint (union-committee) commission
8. The assembly
9. Others
10. When the union negotiated your contract, which union was it?
11. Other unions
12. How did the contract turn out?
13. Quite reasonable
14. Mediocre
15. Unacceptable
16. Note: The complement to 100 percent represents "don't know, no answer."

This Country

Strike

During the past 12 months, was there a strike in your business firm?

More than one: 20.5
One: 20.3
None: 55.5

Were results achieved by the strike (for those who went on strike)?

Good: 23.2
Rather insignificant: 36.3
Counterproductive: 29.2

Under the same circumstances, would you go on strike again?

No: 47.0
Yes: 39.9

Opinion of strikes

A last resort, after all possibilities for negotiation are exhausted: 77.3
To be used forcefully, in relation to favorable forces: 10.9

Regulation of strikes

Should be regulated, so as to be used in an orderly manner: 63.9
Not even a law should limit them: 19.4

Note: The complement to 100 percent represents "don't know, no answer."

Union

What should the union do, basically? (more than one answer)

Negotiate contracts: 62.3
Provide labor advice: 56.2
Inform the public about workers' problems: 32.9
Organize mobilizations and pressure the government: 10.3

What are the functions of the union?

Only to protect occupational interests: 50.5
To protect interests and also to participate in the nation's problem-solving: 46.3

Do you favor the existence of a single union, or several?

Union unity: 51.9
Union plurality: 43.3

Which unions have operated in your business firm?

CCOO: 57.3
UGT: 48.5
USO: 12.1
CSUT: 7.9
CNT: 7.5
SU: 4.1
Others: 11.1
None: 16.8

What should the relation of the unions with the parties be?

Completely independent: 55.5
Occasional agreements: 32.8
Subordinate: 4.2

Note: The complement to 100 percent represents "don't know, no answer."

Business Firm and Work

View of the Firm

The firm is a team with a common interest: 56.4
The firm is not a team, because the interests are opposed: 38.9

Satisfaction with work

My work is not too monotonous or boring: 70.1
I can put my initiative and ideas into practice: 56.7
The work pace is tolerable: 81.8
The risk of disease or accident is minimal: 78.7
My work is not too simple for my ability: 47.7

If you had a choice between remaining with this firm or changing firms,what would you do?

I would remain with this firm: 79.8
I would change firms: 10.5

Note: In questions 1 and 3, the complement to 100 percent represents "don't know, no answer." In question 2, each answer adds up to 100 percent with those who had the opposite opinion, plus "don't know, no answer."

Standard Agreement and Statute

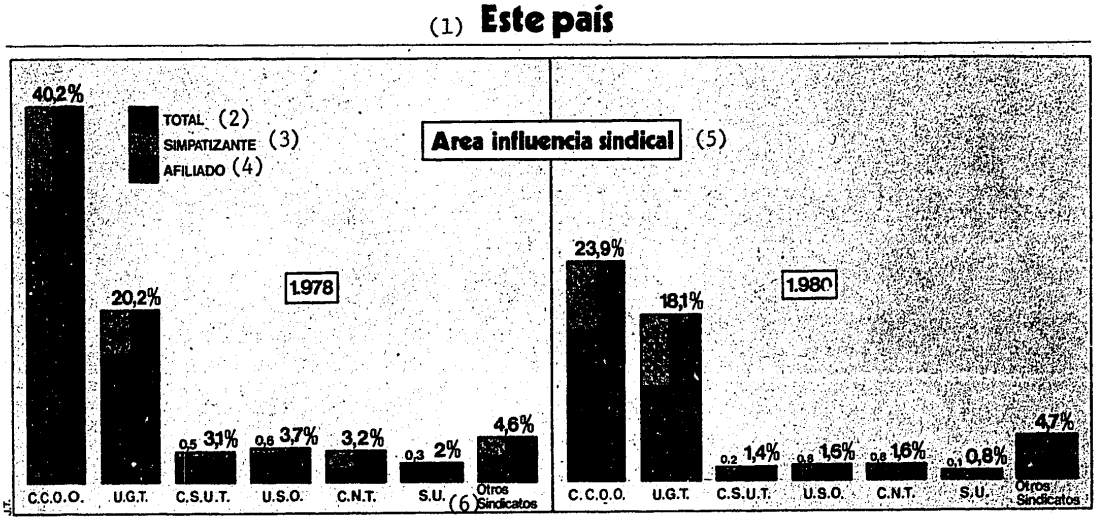
Opinion of AMI [Interconfederal Standard Agreement]

Acceptable:	14.4
Useless, or detrimental:	13.4
Know nothing about AMI:	52.8

Opinion of the Workers Statute [ET]

Acceptable	25.1
Useless, or detrimental:	28.1
Know nothing about ET	39.7

Note: The complement to 100 percent represents "don't know, no answer."



Key:

1. This Country
2. Total
3. Sympathizer
4. Member
5. Union area of influence
6. Other unions

In what country do the workers have more power than in Spain?

Germany: 26 percent
France: 10.8 percent
Great Britain: 6.3 percent
Sweden: 6 percent
Switzerland: 5.3 percent
United States: 3 percent
USSR: 2.8 percent
Italy: 0.5 percent
Other capitalist countries: 3.2 percent
Other socialist countries: 3.5 percent
Don't know, no answer: 32.4 percent

In Germany, they are the most powerful.

Labor Leaders Discuss Results

Madrid CAMBIO 16 in Spanish 26 Oct 80 pp 22-23

[Statements by Camacho, Redondo]

[Text] The poll shows a decline in labor union membership. To what do you attribute it?

M. Camacho: First, to the general disenchantment of the Spanish society, because the problems have not been solved as quickly as people expected, or have been poorly solved owing to the government's right wing policy. Insofar as the workers are concerned, there is the contributing factor that the economic crisis is worse for them, and they cannot understand there being a cockfight among the labor confederations instead of unity among them to cope with the unemployment and crisis.

N. Redondo: First, because we in the confederations have been unable to take on the flow of membership with very weak organizational structures; secondly, because we have been unable to provide all the services supplied by other European confedetions; and third, due to the policy of exclusion carried out by the government for lack of labor union assets.

The data indicate that the workers currently prefer that the collective bargaining be done by the unions, instead of the company committees. What is your opinion?

M. Camacho: Polls must be put in their proper place. A sample of 2,400 individuals is slight, and hardly reliable. I don't believe that the workers could have said that. It would be impossible to pit the participation of the federations against that of the committees. What should exist is a joint negotiation of contracts that would enable the workers to participate in the businss firms, and the confederations in the branch or national negotiations.

N. Redondo: I consider it logical, because as union experience is gained one understands the need for the labor confederations to be the ones negotiating the contracts.

The fact is that we have taken the initiative 2 years in advance, by proposing which should be the areas for contracting and who the leaders should be.

According to the poll, the industrial workers are divided nearly in halves, between advocates of labor union unity or plurality. How would you assess this?

M. Camacho: To me, there is no doubt: unity creates strength. And the strength of the workers is the fact that we are the most numerous, and we produce everything that is beautiful and useful. But, in order to be functional, we must have a consciousness and unity. Why have the business owners united, and not we? Because of a different ideology or union methods? The interest is mutual, and we must unite?

N. Redondo: We prevented, at the time, what was intended to be a labor union unity which was to some extent forced and not accepted by all the workers; and we said that a unifying process is a matter of time, because the differences between the UGT and the CCOO models are fundamental. The current situation of the labor unions is not one that would cause jumping for joy, but it is far better than a Portuguese style labor union unity, which was virtually forced, or the labor union unity in the nations of the East. If the CCOO members were in power, at best UGT would have to play the role of the Polish Walesa, asking for bread and freedom.

Judging from the information, it would appear that the results of the strikes were quite unsatisfactory to the workers. What is the reason for this?

M. Camacho: None of us wants a strike for a strike's sake. And if the confederations remain united, they can generally win. To lose, all that is required is that a minority federation spread confusion and bewilderment among the workers. It is understandable that there be workers who, judging from what has occurred this year, might have that opinion. But if the workers were told that the strike was lost for lack of unity, when some federation dissociated itself from the essential plans for struggle and pressure needed to make it effective, they would understand it.

N. Redondo: That happened because extraordinary abuse was made of the strike, and it was often abused for nonunion reasons, for political resons. And it happened because the strikes were decided on in a "small" committee by the leadership of certain unions, without consulting the workers; which later made it necessary to call them off. This created frustrations, and forced the workers to pay high social costs without securing any change in the advantages entailed in the use of strikes as an extreme resort for union action.

Analysis of Trends, Attitudes

Madrid CAMBIO 16 in Spanish 26 Oct 80 p 24

[Article by INI Foundation Director of Sociological Research Victor Perez Diaz: "Interpreting the Workers' Voice"]

[Text] Scientific reasons aside, I think that this poll (like that of 2 years ago) was taken for a very simple purpose: because the matter of what the Spanish workers think and want is essential to Spain's short and long-term future, and because it is equally essential to learn this through the voice of the workers themselves in

the rather large extent to which a sociological poll makes it possible to do so. For, with all its limitations, a poll has the immense capacity to silence for a moment the voices of politicians, labor unionists, experts and journalists, and to give the floor to the people themselves. In this way, sociology becomes one of the means of expression of the civil society, and one of its defenses.

But, like everything else in this life, the worker's voice, or his response, does not speak for itself alone. Some interpretation is essential. And this must be made by the reader himself, with his good sense and his critical sense, understanding and asking questions. And, as an aid or a stimulus for both, here are two comments.

In the first place, it must be admitted that one of the most spectacular features of this poll is the decline in labor union membership. The fact is evident and important. But I want to warn the reader that jumping from this fact to the conclusion of a drop in the workers' support for the unions would be unwise. There is evidence of the former, but not of the latter; because the unions' presence in the business firms is considerable, and the unions' role as contract negotiators is even more so. In fact, the decline in membership is compatible with the maintenance of a large degreee of support. What is the explanation for this? Probably because the workers' attitude toward the unions is increasingly instrumental, related to an exchange of backing for services (especially in the area of contract negotiation), and this backing, generally speaking, is calculated so as to accrue the maximum results at the minimum cost. Thus, it is expected to obtain good contracts without a need for massive membership: one need only vote for union candiates and/or allow the unions to do so, and back them.

If this instrumental attitude is intensified, as I believe is the case, toward the unions, and even more so toward the parties, it would entail major consequences. For if my interpretation is correct, and the expansion of union influence is maintained at the cost of its intensity, it would affect the unions' capacity for mobilization which, at least insofar as nonoccupational or labor objectives are concerned, would decline, because mobilizing voters from a distance is not the same as mobilizing members who are more or less identified with the organization's end goals.

Secondly, there are a few comments on the "workers' moderation," that may be inferred from the information in this poll. The term "moderate" is correct if it is compared with "revolutionary;" it is not correct if it is assumed to be the equivalent of "conservative." Because it is true that there are no traces of the classic Marxist-style "class consciousness": of self-identification as a working class hostile to the existing order. Furthermore, there is no evidence of antagonism toward the business firm and the business owner; a matter that is not discussed at length in this article, but concerning which there is more than enough information available.

However, these people are not conservative, and not only because their steadfastness in the pursuit of what they consider their legitimate interest: jobs, a decent wage and fair treatment, is undeniable; but because of something else: because their desires for a voice in the business firms are serious, their pressure in the

direction of equality is significant, and their aspirations and longing for a moral community are profound. These desires, pressures and aspirations are to some extent reflected in their majority vote for the left. But this is a left which, ideally, and they indicate this quite clearly, would be the left that operates within the context that is typical of Western Europe (and not just Italy).

To find the proper words and facts related to this instrumental attitude on the part of the workers that is (relatively) moderate is a challenge that might be met by the cultural intermediaries, and people with a calling to public office in this country. Let us hope that they will not respond by disregarding it, because they find it distasteful, at their own expense and that of everyone else.

2909
CSO: 3110

COUNTRY SECTION UNITED KINGDOM

COUNTRY'S INVOLVEMENT IN PRODUCTION OF GAS WEAPONS DISCUSSED

LD051639 London THE GUARDIAN in English 5 Jan 80 p 11

[Report by David Fairhall: "The Cloud on Mr Pym's Horizon"]

[Text] Our defense minister, Mr Francis Pym, has come to believe that we need to deter the Russians from using chemical weapons in Europe--that is gas--by acquiring the same weapons ourselves. To what should be his considerable credit among those who advocate open government, he has made his personal views known before the completion of the policy review under way in his department and of the more important review Mr Reagan's administration will probably instigate soon after he U.S. presidential inauguration.

In fact, My Pym has several times invited public debate of this emotive issue. But so far, outside the narrow world of what the Americans would call the disarmament community, his challenge has aroused little response--certainly a lot less than to comparable issues to nuclear strategy.

As a result, many people who passionately object to Britain becoming involved in the nasty business of gas warfare may shortly wake up to find that the decision has been taken--either to share, or at least support, a U.S. program to acquire a new generation of so-called binary nerve gas weapons for inclusion in NATO's armory.

Mr Pym is not old enough to remember the first world war. But his image of gas warfare is probably the same as for most people in this country--lines of blinded soldiers groping their way back from the trenches of 1915, when the Germans launched their first chlorine attacks.

The Russians have similar images, though on a larger scale. They suffered half a million gas casualties in that war. But whereas the British reaction seems to have been dominated by revulsion, which in turn prompted support of the 1925 Geneva protocol banning the first use of chemical weapons, the Soviet Government seems to have been more concerned with acquiring the means of retaliation in kind--which its forces certainly possess today.

Both these reactions can intellectually be justified as a way of avoiding or deterring the use of gas by potential enemies. Mr Pym wants the British forces to change from one to the other, from a mixture of moral exhortation and passive defense to active deterrence.

It is enormously important that his proposal be scrutinized before it is carried out, especially when the opportunities to divert our military strategy in any new direction are so rare. Mr Pym has already steered us through two of them during his short spell as defense minister--the decision to replace the Polaris nuclear deterrent with Trident and acceptance of the new Cruise missiles.

The Defense Ministry's reasons for conducting a review are said to include the physical deterioration of existing U.S. gas munitions (including those stored at Hanau and other depots in West Germany, not declared to NATO but indirectly available to it under U.S. national control, the imbalance of gas warfare capability between East and West, and the need to deter the Russians from using gas in Europe as some reports suggest they may already have done in Afghanistan.

The review may also privately be seen in Whitehall as a way of putting pressure on the Russians to accept international control of chemical weapons--though no one has said as much. The effective trigger seems more likely to have been a combination of Mr Pym's personal interest and the need to establish the British line should the Americans decide to accelerate their binary nerve gas program into full production this year.

The British line on gas warfare has hitherto been dominated by the effort, initiated by our government through the Geneva disarmament committee, to negotiate a new international convention banning the production and possession of chemical weapons as well as their first use. This was seen earlier as a parallel agreement to the one banning the possession of biological weapons--germ warfare. That was endorsed by both the Russians and the Americans.

The song in Geneva has been the familiar one of verification. Nerve gas production is similar to making insecticides--in other words extremely easy to conceal in an industrialized society--and the Russians notably did not accept the recent British invitation to inspect Nancekuke and other installations to explore the practical problems of international inspection.

The case for more positive gas warfare deterrence starts from the "formidable" capability Western intelligence believes the Soviet forces to possess, both offensive and defensive. The Russians are said to have stocks of nerve agents like Soman (they apparently captured a complete German nerve gas plant at the end of WW II and shipped it back to the USSR, with its technicians), blister agents like mustard gas, choking agents such as phosgene, and blood agents such as hydrogen cyanide.

LDO51641 This last poison is especially important to the argument, because it is claimed that Russian soldiers are issued with an antidote although Soviet commanders must know that none of the NATO forces they might meet have that particular chemical available.

The inference is that the Russians are ready to use blood agents themselves, offensively, and need the antidote to protect their own troops. Logically, hydrogen cyanide would be used ahead of an advancing formation because its effects disperse rapidly. Nerve gas, on the other hand, can be mixed as a heavy substance like glycerine, which lingers for days in lethal form.

All these preparations, the Soviet leaders assure their own people and anybody else who cares to listen, are purely defensive.

In battle, Soviet orders to use such weapons would have to come from a high level, but NATO strategists have long assumed that in a major European war such orders would be readily given if there were big military gains to be made.

What this assumption is supposed to imply about the American retaliatory capability is not clear.

For the American military establishment, the binary nerve gas program has a lot of parallels with the neutron bomb--except that they no doubt hope to handle the public relations rather better.

The binaries get their name because the chemicals which mix to form the lethal gas compound are kept separate, in much less toxic form, and only allowed to combine when the shell is in flight or the bomb (known as bigeye) has been dropped. This means that the chemicals can be stored more safely, with less environmental protest when they have to be moved around or dumped, and the munitions can also be handled more easily.

The net effect is to make binary nerve gas weapons more acceptable than the existing kind. But the corollary--as with the neutron bomb--is that the military may be that much more inclined to use them.

The first thing one would like from Mr Pym--preferably, perhaps, in evidence to the parliamentary defense committee--is an assurance that Britain is not simply being set up to provide covering applause when the Pentagon announces a binary program to sceptical NATO allies.

Rightly or wrongly, we have played that role in the Cruise missile debate. There is no reason why we should automatically line up with the Americans on this issue. The Germans, on whose territory the gas would most likely be released, have shown no inclination to do so.

If Britain is entitled to make up her own mind, she should surely not be asked to change it before abandoning as hopeless the serious effort still being made in Geneva to negotiate a verifiable ban. At least one assumes it is a serious effort because Mr Pym, the foreign secretary, Lord Carrington, and others have often referred to its importance.

The worrying thing about the Defense Ministry's approach to issues like this, including the Trident nuclear missile decision, is its assumption that we necessarily want the most effective deterrent we can afford to buy--as if deterrence had no costs other than the financial one.

Locking yourself up in a vault with a boobytrapped door provides a sort of security, but it makes worthwhile living difficult. Demonstrating the means to hit back at the Russians should they use the gas on our troops will certainly frighten or deter them more directly than we can expect to at present--provided they act rationally and care about the safety of their own troops. But at what cost? The chance to

improve on the Geneva protocol of 1925? Another twist in the escalatory spiral, with the USSR producing its own binaries?

Some risks, especially ones we have lived with for many years, may be worth taking to avoid new ones. Unless, of course, Mr Pym is playing a poker-faced game of bluff to put a time limit on the Geneva negotiations. In that case both sides in the debate may eventually wish to praise him.

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